Vol. 1008 Number 3

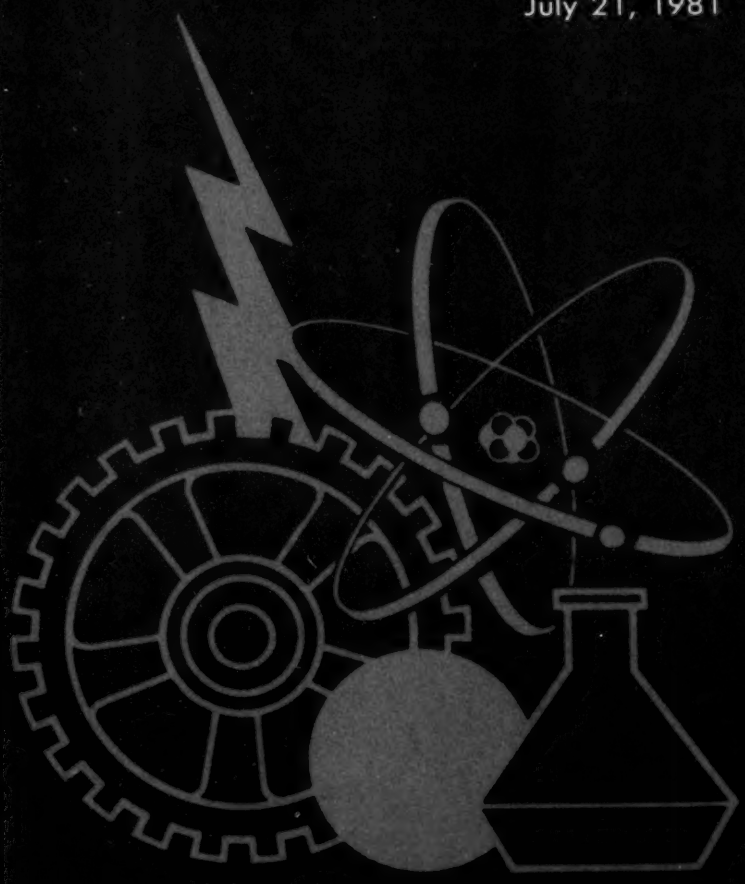
OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

July 21, 1981



U.S. DEPARTMENT OF COMMERCE

Patent and Trademark Office

PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

OFFICIAL GAZETTE of the UNITED STATES PATENT and TRADEMARK OFFICE

July 21, 1981 Volume 1008 Number 3

CONTENTS

	Page
Patent and Trademark Office Notices	
Patent Cooperation Treaty (PCT) Information	1008 OG 16
Reissue Applications Filed	1008 OG 16
Patent Certificates of Correction	1008 OG 17
National Technical Information Service	1008 OG 17
Reference Collections of U.S. Patents	1008 OG 19
Condition of Patent Applications	1008 OG 20
Reissue Patents Granted (30,680)	811
Plant Patents Granted (4,752)	815
Patents Granted	
General and Mechanical (4,274,037)	817
Chemical (4,279,612)	1011
Electrical (4,280,013)	1123
Design Patents Granted (259,895)	1195
Index of Patentees	PI 1
Indices of Reissue, Design and Plant Patentees	PI 43
Classification of	
Patents (Including Reissues)	PI 45
Designs and Plants	PI 47
Geographical Index of Residence of Inventors	
Patents (Including Reissues)	PI 48
Designs and Plants	PI 49
Change of Address Form and Subscription Order Form	Back Page

The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENTS SECTION), issued weekly, subscription $325.00 per annum for first-class mailing, also available as fourth-class mail at $225.00 domestic; $281.25 foreign; foreign first-class mailing rates will be furnished upon request; single copies each, $5.50 domestic, $6.90 foreign.

THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly, subscription $105.00 per annum, foreign mailing $131.25 per annum; single copies $2.75 each domestic, $3.45 foreign.

GENERAL INFORMATION concerning PATENTS, price $2.25 each.

GENERAL INFORMATION concerning TRADEMARKS, price $1.70 each.

PRINTED COPIES OF PATENTS are furnished by the Patent and Trademark Office at 50 cents each; PLANT PATENTS in color, $1.00 each; copies of TRADEMARKS AND DESIGN PATENTS at 20 cents each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT, consult Chapter 1800 of the Manual of Patent Examining Procedure and notices 90–95 in the consolidated listing of notices appearing in the Official Gazette of Jan. 6, 1981.

The PCT fees in effect after May 19, 1981 are as follows:

Transmittal fee	$ 35.00
Search fee	300.00
International Basic Fee (for the first 30 sheets of an international application)	215.00
Basic Supplemental Fee (for each sheet over 30)	4.00
International Designation Fee (for each State for which a national patent is sought, or group of States for which the same regional patent is sought)	50.00

RENE D. TEGTMEYER,
Assistant Commissioner for Patents.

1008 OG 16

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

4,122,263, Re. S.N. 237,961, Filed Feb. 25, 1981, Cl. 544/114, PRODUCTION OF 2-(O-ALKYLTHIOPHENYL)-1,3-DIAZOCYCLOALKENE HYDROHALIDES, Helmut Hagen, et al., Owner of Record: *BASF Aktiengesellschaft, Ludwigshafen, Germany,* Attorney or Agent: Herbert B. Keil, et al., Ex. Gp.: 121

4,148,434, Re. S.N. 253,421, Filed Apr. 9, 1981, Cl. 235/435, METHOD OF PRODUCING A BINARY CODE AND MEANS FOR USING THE SAME, John L. Lorenzo, Owner of Record: *Pitney Bowes, Inc., Stamford, Conn.,* Attorney or Agent: Peter Vrahotes, et al., Ex. Gp.: 235

4,217,164, Re. S.N. 226,859, Filed Jan. 21, 1981, Cl. 156/541, LABELLING SYSTEM, Herbert Lamers, Owner of Record: *Gar Doc, Inc., Milford, N.H.,* Attorney or Agent: John C. Fox, et al., Ex. Gp.: 161

PATENT NOTICES

Certificates of Correction for the Week of July 21, 1981

3,933,889	4,243,408	4,254,435	4,259,937
3,955,213	4,243,582	4,254,788	4,260,596
3,970,648	4,244,006	4,255,207	4,260,644
4,008,326	4,244,402	4,255,248	4,261,420
4,009,082	4,244,954	4,255,258	4,261,542
4,045,449	4,245,336	4,255,270	4,261,761
4,066,625	4,245,351	4,255,339	4,261,768
4,068,953	4,246,586	4,255,472	4,261,830
4,183,639	4,246,704	4,255,475	4,261,962
4,186,263	4,246,712	4,255,480	4,262,092
4,192,265	4,247,239	4,255,922	4,262,501
4,196,834	4,247,248	4,256,073	4,262,792
4,199,131	4,247,618	4,256,158	4,262,929
4,202,086	4,248,320	4,256,619	4,262,996
4,203,893	4,248,539	4,256,638	4,263,288
4,208,923	4,248,909	4,256,867	4,263,310
4,211,915	4,248,994	4,256,896	4,263,789
4,213,955	4,248,998	4,257,144	4,263,945
4,218,394	4,249,734	4,257,627	4,264,045
4,218,502	4,249,805	4,257,964	4,264,112
4,230,073	4,250,214	4,257,995	4,264,163
4,231,996	4,250,286	4,257,996	4,264,175
4,233,245	4,250,314	4,258,160	4,264,366
4,233,300	4,250,361	4,258,354	4,264,426
4,233,490	4,250,508	4,258,427	4,264,455
4,234,070	4,250,722	4,258,467	4,264,706
4,234,128	4,251,754	4,258,476	4,264,759
4,234,315	4,251,808	4,258,892	4,265,016
4,235,619	4,252,020	4,259,029	4,265,115
4,235,698	4,252,154	4,259,109	4,266,064
4,236,008	4,252,427	4,259,194	4,266,240
4,236,633	4,252,458	4,259,195	4,266,252
4,236,829	4,252,835	4,259,372	4,266,265
4,237,092	4,253,179	4,259,488	4,266,378
4,238,254	4,253,882	4,259,516	4,267,310
4,242,183	4,254,031	4,259,673	4,267,468
4,243,311	4,254,074	4,259,920	4,267,839

National Technical Information Service

U.S. GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The invention listed below are owned by the U.S. Government and are available for domestic and, possibly, foreign licensing.

Copies of patents cited are available from the Commissioner of Patents and Trademarks, Washington, D.C. 20231, for $.50 each. Requests for copies of patents must include the patent number.

Copies of patent applications cited are available from the National Technical Information Service (NTIS), Springfield, Va. 22161 for $5.00 each ($10.00 outside North American Continent). Requests for copies of patent applications must include the patent application number. Claims are deleted from patent application copies sold to avoid premature disclosure. Claims and other technical data will usually be made available to serious prospective licensees upon execution of a non-disclosure agreement.

Requests for information on the licensing of particular inventions should be directed to:

Office of Government Inventions and Patents
U.S. Department of Commerce
P.O. Box 1423
Springfield, Va. 22151

DOUGLAS J. CAMPION,
Program Coordinator,
Office of Government Inventions and Patents
National Technical Information Service
U.S. Department of Commerce.

U.S. DEPARTMENT OF THE AIR FORCE

AF/JACP
1900 Half St., S.W.
Washington, D.C. 20324

Patent application 6-207,829. Diethynylbenzene-Ethynylpyrene Copolymers. Filed Nov. 17, 1980.

U.S. DEPARTMENT OF THE NAVY

Director, Navy Patent Program/
Patent Counsel for the Navy
Office of Naval Research
Code 302
Arlington, Va. 22217

Patent application 6-227,340. Potting Techniques for Fiber Optical Couplers. Filed Jan. 22, 1981.

Patent 4,238,093. Aircraft Launcher. Filed Dec. 21, 1978. Patented Dec. 9, 1980. Not available NTIS.

Patent 4,238,464. Air Revitalization Materials. Filed Aug. 9, 1978. Patented Dec. 9, 1980. Not available NTIS.

Patent 4,240,272. Arctic Canteen. Filed June 18, 1979. Patented Dec. 23, 1980. Not available NTIS.

Patent 4,240,599. Vehicle Launching Device. Filed Apr. 30, 1979. Patented Dec. 23, 1980. Not available NTIS.

Patent 4,241,167. Electrolytic Blocking Contact to InP. Filed May 25, 1979. Patented Dec. 23, 1980. Not available NTIS.

Patent 4,243,024. G-Protection System Sensing a Change in Acceleration and Tilt Angle. Filed Apr. 2, 1979. Patented Jan. 6, 1981. Not available NTIS.

Patent 4,245,558. Infrared Proximity Fuze Electronic Amplifier. Filed Sept. 26, 1963. Patented Jan. 20, 1981. Not available NTIS.

Patent 4,246,472. Controlled Store Separation System. Filed Dec. 18, 1978. Patented Jan. 20, 1981. Not available NTIS.

Patent 4,246,571. High Resolution Quantizer. Filed Mar. 23, 1978. Patented Jan. 20, 1981. Not available NTIS.

Patent 4,248,630. Method of Adding Alloy Additions in Melting Aluminum Base Alloys for Ingot Casting. Filed Sept. 7, 1979. Patented Feb. 3, 1981. Not available NTIS.

Patent 4,248,683. Localized Anodic Thinning. Filed Apr. 22, 1980. Patented Feb. 3, 1981. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Assistant General Counsel for Patent Matters
NASA Code GP-4
Washington, D.C. 20546

Patent application 6-119,337. Partial Interlaminar Separation System for Composites. Filed Feb. 7, 1980.

Patent application 6-147,695. Receiving and Tracking Phase Modulated Signals. Filed May 7, 1980.

Patent application 6-185,868. A Method and Technique for Installing Light-Weight Fragile, High-Temperature Fiber Insulation. Filed Sept. 11, 1980.

Patent application 6-191,746. Improved Refractory Coatings. Filed Sept. 29, 1980.

Patent application 6–191,747. Solar Power Satellite System. Filed Sept. 29, 1980.

Patent application 6–195,547. An Electro-Optical Doppler Tracker Means and Method for Optical Correlation of Synthetic Aperture Radar Data. Filed Oct. 9, 1980.

Patent application 6–198,093. Kinesimetric Method and Apparatus. Filed Oct. 17, 1980.

Patent application 6–199,768. Thermoset-Thermoplastic Aromatic Polyamides. Filed Oct. 23, 1980.

Patent application 6–210,632. Mechanical Bonding of Metal. Filed Nov. 26, 1980.

Patent application 6–217,336. Improved Attachment System for Silica Tiles. Filed Dec. 17, 1980.

Patent application 6–218,587. Texturing Polymer Surfaces by Transfer Casting. Filed Dec. 19, 1980.

Patent application 6–219,639. A Method for Producing a Solidified Body of Silicon. Filed Dec. 24, 1980.

Patent application 6–219,680. Method of Forming Frozen Spheres in a Force-Free Drop Tower. Filed Dec. 24, 1980.

Patent application 6–219,681. Absorbent Product and Articles Made Therefrom. Filed Dec. 24, 1980.

Patent application 6–220,212. Gyrotron Transmitting Tube. Filed Dec. 24, 1980.

Patent application 6–220,214. An Improved Solid Electrolyte Cell. Filed Dec. 24, 1980.

Patent application 6–224,231. CAT Altitude Avoidance System. Filed Jan. 12, 1981.

Patent application 6–225,500. Tactile Sensing System. Filed Jan. 16, 1981.

Patent 4,213,064. Redundant Operation of Counter Modules. Filed Apr. 4, 1978. Patented July 15, 1980. Not available NTIS.

Patent 4,213,684. System for Forming a Quadrified Image Comprising Angularly Related Fields of View of a Three Dimensional Object. Filed Mar. 20, 1978. Patented July 22, 1980. Not available NTIS.

Patent 4,216,542. Method and Apparatus for Quadriphase-Shift-Key and Linear Phase Modulation. Filed Mar. 6, 1979. Patented Aug. 5, 1980. Not available NTIS.

Patent 4,219,203. Thermal Barrier Pressure Seal. Filed Dec. 29, 1978. Patented Aug. 26, 1980. Not available NTIS.

Patent 4,220,171. Curved Centerline Air Intake for a Gas Turbine Engine. Filed May 14, 1979. Patented Sept. 2, 1980. Not available NTIS.

Patent 4,221,005. Pseudonoise Code Tracking Loop. Filed May 21, 1979. Patented Sept. 2, 1980. Not available NTIS.

Patent 4,225,102. Aerodynamic Side-Force Alleviator Means. Filed Mar. 12, 1979. Patented Sept. 30, 1980. Not available NTIS.

Patent 4,229,182. Recovery of Aluminum from Composite Propellants. Filed Sept. 29, 1978. Patented Oct. 21, 1980. Not available NTIS.

Patent 4,243,323. Interferometer. Filed Nov. 30, 1978. Patented Jan. 6, 1981. Not available NTIS.

Patent 4,243,327. Double-Beam Optical Method and Apparatus for Measuring Thermal Diffusivity and Other Molecular Dynamic Processes in Utilizing the Transient Thermal Lens Effect. Filed Jan. 31, 1979. Patented Jan. 6, 1981. Not available NTIS.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 323-4572
	Sunnyvale Patent Library*	(408) 736-0795
Colorado	Denver Public Library	(303) 573-5152 Ext. 222
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4519
Illinois	Chicago Public Library	(312) 269-2814
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6552
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214, 215
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(404) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7814
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 790-6291
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County Public Library	(513) 369-6969
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 242-7361 Ext. 258
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1321**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3128
	University Park: The Pennsylvania State Libraries	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 224
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

**Call only between the hours of 10:00 a.m. and 5:00 p.m.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF May 30, 1981

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director ..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	3-13-80
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director ..... Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	10-11-79
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director .... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	2-15-80
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director ..... Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	7-01-80
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director ..... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	1-28-80
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	12-28-79
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director ..... Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	9-17-79
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—VACANT ..... Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	11-14-79
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director ..... Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling.	1-07-80
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director ..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	3-28-79
DESIGN, GROUP 290—KENNETH L. CAGE, Director ..... Industrial Arts; Household, Personal and Fine Arts.	8-02-79
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director ..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	1-09-80
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director ... Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	11-29-79
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director ..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	10-16-78
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director ..... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	10-22-79
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—G. M. FORLENZA, Director ..... Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	3-19-79

Expiration of patents: The patents within the range of numbers indicated below expire during May 1981, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,131,397 to 3,134,980, inclusive

Plant Patents ..... Numbers 2,399 to 2,406, inclusive

REISSUES

JULY 21, 1981

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 30,680

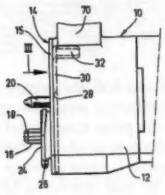
CONNECTING ARRANGEMENT FOR A MACHINE TOOL

Willy Kress, Bisingen, and Josef Seifert, Grosselfingen, both of Fed. Rep. of Germany, assignors to Firma Kress elektrik GmbH & Co., Bisingen, Fed. Rep. of Germany

Original No. 4,103,511, dated Aug. 1, 1978, Ser. No. 729,006, Oct. 4, 1976. Application for reissue Feb. 12, 1979, Ser. No. 11,306

Int. Cl.³ F16C *1/06, 1/12*

U.S. Cl. 64—4 **10 Claims**



1. Connecting arrangement for a machine tool having an electromotor driving device in a housing and an exchangeable operating device comprising a driving shaft projecting from the housing of the driving device and a receiving coupling part in a housing of the operating device receiving the driving shaft, so that the housings of the driving device and operating device may be fixed together in a centered manner, wherein the housings of the driving device and operating device have flat, perfectly equal contact surfaces disposed perpendicularly in relation to the driving shaft, and wherein the housings are fixed mutually untwistably on their contact surface by means of axially outward protruding centering pins on one contact surface and centering openings on the other contact surface receiving the centering pins, further comprising coupling means operated from the outside of said contact surfaces when said contact surfaces are fitted against each other in a twist-secure manner.

Re. 30,681

Patent Not Issued For This Number

Re. 30,682

CRANKCASE EMISSION SEPARATOR AND COLLECTOR

Elmer W. Bush, 2010 Trimble Way, Sacramento, Calif. 95825

Original No. 4,089,309, dated May 16, 1978, Ser. No. 645,900, Dec. 31, 1975. Application for reissue May 15, 1980, Ser. No. 150,015

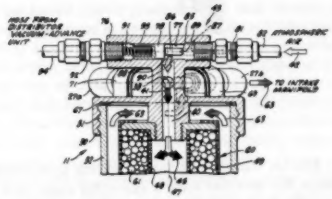
Int. Cl.³ F02M *25/06;* **B01D** *39/06*

U.S. Cl. 123—573 **16 Claims**

1. A crankcase emission fluid separator for use with an engine having a crankcase, an air intake leading to a combustion chamber and a vacuum source, said separator comprising:

a housing forming an enclosure and including inlet means adapted to be coupled to said engine crankcase for admitting emisions therefrom to the interior of said housing, outlet means adapted to be coupled to said air intake for furnishing separated fluids thereto, vacuum port means adapted to be coupled to said vacuum source, and air intake means for introducing ambient air into said housing; and

means within said housing for conditioning engine crankcase emissions entering said housing via said inlet means and leaving said housing via said outlet means to separate liquid and solid components from gaseous components



thereof, said conditioning means including a container having first and second apertured walls and a plurality of relatively inert particles located in said container between said walls and providing a barrier through which said emissions pass from said inlet means to said outlet means, fluid conduit means having a first end terminating adjacent one of said first and second container walls and a second end in fluid communication with said inlet means and said air intake means, and valve means coupled to said vacuum port means for controlling the quantity of ambient air admitted to said fluid conduit means in accordance with the magnitude of said vacuum source, said valve means including bias means for limiting the admission of ambient air into said fluid conduit means to a minimum amount when the magnitude of said vacuum source is a minimum and for permitting the amount of ambient air admitted to said fluid conduit means to increase as the magnitude of said vacuum source increases.

Re. 30,683

FLUID COUPLING DEVICE AND BIMETAL COIL ADJUSTMENT FOR USE THEREIN

Kenneth R. Streeter, Marshall, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Original No. 4,116,316, dated Sep. 26, 1978, Ser. No. 827,414, Aug. 24, 1977. Continuation of Ser. No. 687,264, May 17, 1976, Pat. No. 4,054,193. Application for reissue Aug. 6, 1979, Ser. No. 64,225

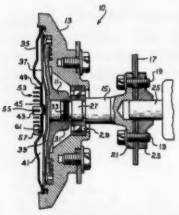
The portion of the term of this patent subsequent to Oct. 18, 1994, has been disclaimed.

Int. Cl.³ F16D *43/25, 35/00*

U.S. Cl. 192—82 T **10 Claims**

6. A fluid coupling device including a first rotatable member, cover means associated with said first member to define a fluid

chamber therebetween, a valve plate disposed to separate said fluid chamber into a fluid operating chamber and a fluid reservoir chamber, a second rotatable member disposed in said fluid operating chamber and rotatable relative to said first member, valve means operable to control fluid communication between said operating chamber and said reservoir chamber, temperature-responsive means controlling said valve means, said temperature-responsive means including a bimetal element having a first end portion operatively connected to said valve means and a second end



portion, bracket means fixed relative to said device and including a generally flat terminal portion extending away from said cover means, a clip member including means receiving said second end portion of said bimetal element and substantially preventing rotational movement of said second end portion relative to said first end portion, said clip member being disposed in engagement with said terminal portion of said bracket means to maintain said second end portion of said bimetal element fixed relative to said first end portion.

Re. 30,684

DIGITAL MASS FLOW CONTROL SYSTEM

Kenneth W. Bullivant, Glassboro, N.J., assignor to K-Tron International, Inc., Scottsdale, Ariz.

Original No. 3,724,720, dated Apr. 3, 1973, Ser. No. 169,398, Aug. 5, 1971. Application for reissue Apr. 3, 1975, Ser. No. 564,965

Int. Cl.[3] **G05G** *11/12*

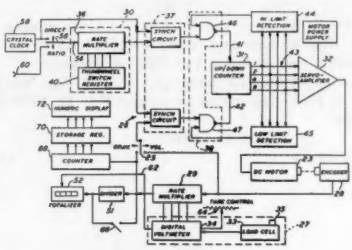
U.S. Cl. 222—55 **38 Claims**

18. A digital mass flow indicator system for use with a motor driven conveyor belt having means for feeding material onto the belt, comprising:

weighing means associated with said conveyor belt for producing a digital signal representative of the instantaneous mass of material on said conveyor belt;

encoder means associated with said conveyor belt for producing a digital signal in the form of a pulse train whose instantaneous frequency is representative of the instantaneous rate of movement of said conveyor belt;

digital rate multiplier means responsive to the digital signals produced by said weighing means and said encoder means for producing a digital signal in the form of a pulse train, *each pulse in said train representing an instantaneous incre-*



ment of mass on said belt, the frequency of said pulse train representing instantaneous mass flow; and

means for scaling the pulse train digital signal produced by said multiplier means to produce a digital signal pulse train in which each pulse is representative of an increment of mass delivered by said conveyor belt *in predetermined dimensions.*

Re. 30,685

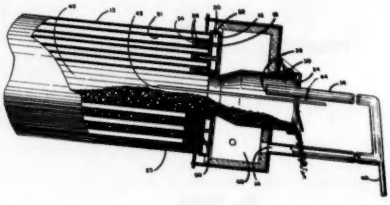
PROCESS FOR RECYCLING ASPHALT-AGGREGATE COMPOSITIONS

Robert L. Mendenhall, 1770 Industrial Rd., Las Vegas, Nev. 89102

Original No. 4,000,000, dated Dec. 28, 1976, Ser. No. 488,518, Jul. 15, 1974. Continuation-in-part of Ser. No. 286,613, Sep. 5, 1972, abandoned, and Ser. No. 360,464, May 15, 1973, Pat. No. 3,845,941. Application for reissue Feb. 6, 1978, Ser. No. 875,397

Int. Cl.[3] **C08J** *3/18;* **C08K** *5/01;* **C08L** *95/00*

U.S. Cl. 106—280 **10 Claims**



1. In a process for recycling used asphalt-aggregate composition comprising heating and mixing said composition in a heating and mixing chamber, the improvement comprising adding to said composition an amount of petroleum hydrocarbon having at least 55% aromatics, *and heating and mixing the composition at a temperature of at least about 200° F.* to achieve a product having a penetration of between about 25 and about 300 dmm at 77° F.

Re. 30,686

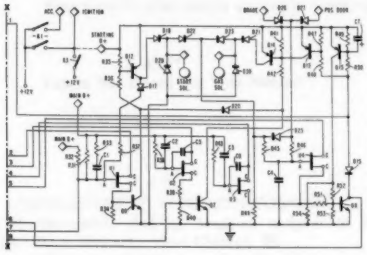
REMOTE STARTING SYSTEM FOR A COMBUSTION ENGINE

Jeffry C. Bucher, R.D. No. 1, Aspers, Pa. 17304

Original No. 4,080,537, dated Mar. 21, 1978, Ser. No. 643,664, Dec. 23, 1975. Application for reissue Dec. 8, 1978, Ser. No. 967,719

Int. Cl.[2] H02P *9/04*

U.S. Cl. 290—38 R **11 Claims**



1. A system to enable a user to start, from a remote location, a combustion engine having an electric starter motor and a source of electrical potential associated therewith, said system comprising:

a receiver for receiving a control signal selectively generated by said user;

means coupled to said receiver and responsive to selective, repetitive receptions of said control signal for selective, repetitive, user-controlled pumping of fuel into said engine prior to activation of a starting operation; [and]

means also coupled to said receiver and responsive to the last of said receptions of said control signal for activating said starting operation and connecting said potential source to said starter motor; *and*

means for preventing any said selective pumping by said user after said starting operation has been activated until said starting operation has been terminated.

Re. 30,687

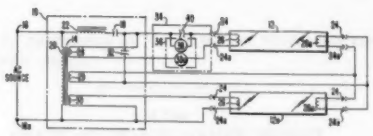
ENERGY SAVING DEVICE FOR A STANDARD FLUORESCENT LAMP SYSTEM

Edward W. Morton, Bronx, N.Y., and John F. Gilmore, Verona, N.J., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Original No. 4,082,981, dated Apr. 4, 1978, Ser. No. 772,790, Feb. 28, 1977. Application for reissue Dec. 4, 1979, Ser. No. 100,314

Int. Cl.[3] H05B *41/36;* **H01J** *17/34*

U.S. Cl. 315—58 **9 Claims**



7. An adapter-container device for connection to one fluorescent lamp of a standard two fluorescent lamp rapid-start series-sequence fixture, wherein said one fluorescent lamp has electrodes operatively positioned therein proximate the ends thereof, each of said electrodes connected at its ends to two pin contacts positioned at each end of said one lamp, said adapter-container comprising an outer protective jacket having end members disposed at either end thereof, one of said end members having two receptacle contacts operatively positioned so as to receive said two pin contacts at one end of said one lamp, the other of said end members having two pin members operatively positioned and readily adaptable to fit into said standard rapid-start fluorescent lamp fixture, a power reducing means included within said adapter-container device and comprising electrode preheat means operable upon application of energizing potential to said fixture to pass electrode heating current to the pin members of said one lamp which are received by said one end member of said adapter-container device in order to preheat the said lamp electrode which connects to said adapter-container-received pin members, an impedance means of predetermined value enclosed within said adapter-container device, and upon energization of said lamp, said impedance means being included in series circuit with said one lamp to decrease by a predetermined amount the operating current through said one lamp.

PLANT PATENTS

GRANTED JULY 21, 1981

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,751
Patent Not Issued For This Number

4,752
CHRYSANTHEMUM NAMED COUGAR
Leonard H. Shoesmith, Woking, England, assignor to Pan-American Plant Company, West Chicago, Ill.
Filed Jul. 18, 1980, Ser. No. 170,075
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—76 **1 Claim**

1. A new variety of chrysanthemum plant for the fall garden, substantially as herein shown and described, particularly characterized by its profuse production of medium sized flowers having a unique bronze coloration and which form a mound shaped display; by its vigorous growth and caespitose habits; and by its adaptability to year-round pot production under photoperiod culture.

4,753
CHRYSANTHEMUM NAMED HUSKEY
Leonard H. Shoesmith, Westfield-Woking, England, assignor to Pan-American Plant Company, West Chicago, Ill.
Filed Jul. 18, 1980, Ser. No. 170,092
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—78 **1 Claim**

1. A new and distinct cultivar of *Chrysanthemum morifolium*, substantially as herein shown and described, particularly suitable for Fall garden culture and having a vigorous growth habit and a profuse production of flowers borne on strong, upright stems; this variety also being adaptable for year-around four inch pot production under photoperiod control.

PATENTS

GRANTED JUL. 21, 1981

ERRATA

For CLASS	See PATENT NO.
172–004	2,279,138
474–082	2,279,172
411–487	2,279,190
294–162	2,279,366
369–247	2,279,423
355–027	2,279,491
416–244 A	2,279,575
414–667	2,279,604
424–246	2,279,818
518–700	2,279,830
369–043	2,280,023
369–219	2,280,024
235–001 D	2,280,034
235–094 R	2,280,035
235–379	2,280,036
235–454	2,280,037
375–004	2,280,219

PATENTS

GRANTED JULY 21, 1981

GENERAL AND MECHANICAL

4,279,037

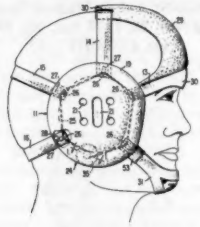
ADJUSTABLE HEADGEAR SUSPENSION

Frank S. Morgan, 5405 N. 27th Rd., Arlington, Va. 22207

Continuation-in-part of Ser. No. 749,800, Aug. 2, 1968, abandoned. This application Oct. 15, 1970, Ser. No. 81,013

Int. Cl.³ A42B *7/00*

U.S. Cl. 2—421 **13 Claims**



1. In an adjustable headgear suspension comprising,

head protective means,

securing means coupled to said protective means for engaging the wearer's head and securing said head protective means in protective relationship to the wearer's head,

said securing means comprising,

a flexible-inextensible eyebrow-engaging head strap means adapted to engage and utilize the wearer's eyebrows as an anchor against vertical displacement when tension is applied to any member of the said securing means,

a flexible-inextensible rear head-engaging strap positioned to utilize the depression at the base of the wearer's skull as an anchor against vertical displacement when tension is applied to any member of said securing means, and

at least one flexible-inextensible head strap passing meridionally around the top of the wearer's head and positioned at substantially equal intervals between the said eyebrow-engaging head strap means and said rear head-engaging strap,

universal tension equalizing means associated with at least one of said head protective means, said universal equalizing means being coupled to said securing means and adapted to simultaneously uniformly vary the tension on said securing means to achieve and automatically maintain uniform tension on said securing means.

4,279,038

HEADPROTECTOR MADE OF ELASTIC MATERIAL FOR ATHLETES

Georg F. Brückner; Bernd Geike, both of Berlin; Bernd-Jürgen Schoen, Grafenau, and Fritz Berger, Ottobeuren, all of Fed. Rep. of Germany, assignors to Metzeler Schaum GmbH, Memmingen, Fed. Rep. of Germany

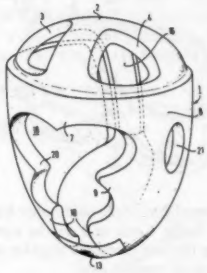
Filed Nov. 5, 1979, Ser. No. 90,981

Claims priority, application Fed. Rep. of Germany, Nov. 3, 1978, 2847869

Int. Cl.³ A63B *71/10*

U.S. Cl. 2—425 **6 Claims**

1. Headprotector for athletes, comprising a soft and elastic one-piece uncoated seamless body of form-molded polyurethane integral foam surrounding the head on all sides, extending to the beginning of the neck vertebrae on the back of the head, and having a bowl-shaped region covering the chin, said molded body having openings formed therein for the eyes, nose, mouth and ears, parting slot means for size adjustment extending from said mouth opening over said chin bowl, and two parallel longitudinal slots extending over the occipital region of the head and ending at the lower edge of said molded body forming a free strap therebetween, said free strap extending from the upper region of the molded body to the beginning of the neck vertebrae.



4,279,039

SWIM CAP WITH INTEGRAL EYE PROTECTION

Daniel C. Drew, Jasper, Ind., assignor to American Aquatic Concepts and Enterprises, Inc., Jasper, Ind.

Filed Jun. 25, 1979, Ser. No. 51,860

Int. Cl.³ A61F *9/02;* **A42B** *1/12*

U.S. Cl. 2—428 **15 Claims**

1. Swimming apparel comprising, in combination, a unitary elastic cap defining an inner surface and an outer surface and having a marginal edge, two goggle means secured to said cap for covering and protecting a swimmer's eyes, each of said goggle means defining a unitary lens assembly having a pair of means disposed adjacent said outer surface for securing straps thereto, a head strap secured between one of said strap securing means on each of said lens assemblies and disposed about a rearward portion of said outer surface of said cap, whereby said cap and said head strap cooperate to retain said apparel on the swimmer's head.

4,279,040

DIVING MASK

Giovanni Garofalo, Rapallo, Italy, assignor to AMF Incorporated, White Plains, N.Y.

Filed Aug. 18, 1980, Ser. No. 179,357

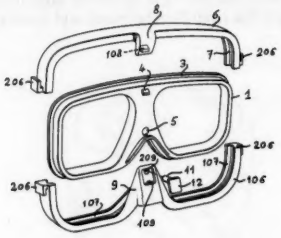
Claims priority, application Italy, Aug. 28, 1979, 15252/79[U]

Int. Cl.³ A61F *9/02*

U.S. Cl. 2—428 **4 Claims**

1. A diving mask comprising an eyeglass mounting frame; an outer frame made in two pieces which can be connected together by means of coupling members; and a rubber face piece

provided with a front aperture, the peripheral rim of which overlaps the outer rim of the said eyeglass mounting frame, and is clamped between the outer rim of the said eyeglass mounting



frame and the internal rim of the said outer frame; and fastening means on the outer frame and on the eyeglass mounting frame for fastening the said members together at least in correspondence of the mask median axis.

4,279,041

ENDOPROSTHESIS COMPOSED OF A SOCKET AND A HEAD RECEIVABLE AND LOCKABLE IN THE SOCKET

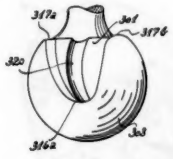
Hans-Wilhelm Buchholz, Möwenstrasse 12, 2000 Hamburg 60, Fed. Rep. of Germany

Filed Jul. 5, 1979, Ser. No. 54,895

Claims priority, application Fed. Rep. of Germany, Jul. 6, 1978, 2829676

Int. Cl.³ A61F *1/03*

U.S. Cl. 3—1.912 **10 Claims**



1. In an endoprosthesis composed of a first member constituting a prosthesis socket provided interiorly with a chamber presenting a receiving surface, a second member constituting a prosthesis head arranged to be inserted into the socket to be received in the chamber and presenting a surface engaging the receiving surface when the head is received in the chamber, and a shaft firmly connected to the head, the improvement wherein: said head is arranged to be inserted into said socket by insertion movement, relative to said socket, from an insertion position to an inserted position, and to be movable, relative to said socket, between the inserted position and an installed state; said head and socket are constructed such that movement between the inserted position and the installed state is effected by rotation of said head relative to said socket; said chamber presents an insertion opening corresponding in configuration to said head when said head is in the insertion position; at least one of said members is shaped for locking said head in said socket when said head is in the installed state; said surfaces of said head and said socket have mutually matched, approximately spherical forms and are provided with deformations which mate with one another only when said head is in the inserted position relative to said socket; said socket presents a boundary edge formed to present at least one corner which encloses said head when said head is in the installed state and which defines one said deformation with which said socket is provided, said corner extending in the direction toward said shaft to a location beyond the plane of maximum width of said head, perpendicular to the direction of insertion movement, when said head is in its inserted position, and said surface of said head is provided with a groove extending in the direction toward said shaft and defining one said deformation with which said head is provided, the depth of said groove being approximately equal to the constriction presented to said insertion opening by said corner.

4,279,042

HIP PROSTHESIS

Thomas P. Andriacchi, Chicago; Jorge O. Galante, Oak Brook, and Steven J. Hampton, Villa Park, all of Ill., assignors to Rush-Presbyterian-St. Luke's Medical Center, Chicago, Ill.

Filed Nov. 26, 1979, Ser. No. 97,410

Int. Cl.³ A61F *1/03*

U.S. Cl. 3—1.913 **3 Claims**

1. A femoral insert for a hip joint prosthesis, comprising a convex spherical head axially secured to a collarless elongated neck and a stem secured to said neck opposite from said head, said stem including a proximal portion having a proximal medial endpoint, and a distal portion having a distal medial endpoint, said proximal portion and said distal portion being angularly joined to define a lateral apex having an apical height, said proximal medial endpoint and said distal medial endpoint defining a medial length, the ratio of said apical height to said medial length being greater than about 0.35.

4,279,043

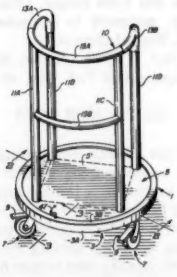
TRANSFER STAND

Bobbie L. Saunders, 5611 W. Circle Z, Tucson, Ariz. 85713

Filed Oct. 15, 1979, Ser. No. 84,782

Int. Cl.³ A61G *1/02*

U.S. Cl. 5—81 R **5 Claims**



1. A device for rotational and lateral movement of a person

able to stand but not to walk, said device comprising in combination:

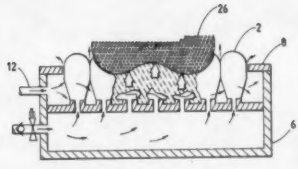
a. a base having an upper surface and a lower surface;
b. four castors attached to the bottom surface of said base to effect rolling of said device across a floor, wherein said castors include brake mechanisms;
c. a platform rotatably disposed above said base;
d. bearing means disposed between said base and said platform for rotatably supporting said platform on said base, said platform having an upper surface;
e. a support structure grippable by the person for supporting the person in a central standing position on the upper surface of said platform, said support structure being rigidly attached to the upper surface of said base, said support structure including
i. first, second, third and fourth vertical post elements extending from first, second, third, and fourth points on the upper surface of said platform, said first, second, third, and fourth points lying on the four corners of a roughly rectangular standing area substantially centrally disposed on the upper surface of said platform;
ii. first and second horizontal gripping elements, said first horizontal gripping element extending between and being rigidly connected to the upper ends of said first and second vertical post elements, said second vertical gripping element extending between and being rigidly connected to the upper end of said third and fourth vertical post elements, the distance between said third and fourth vertical post eleements being sufficiently large that said first and second horizontal gripping elements each extend substantially forward and rearward of a person standing substantially centrally in said substantially rectangular standing gear;
iii. a first front cross bar element extending between and rigidly connected to the upper ends of said second and third post elements; and
f. a brake mechanism activatable to frictionally engage said base with said platform to prevent rotation therebetween.

4,279,044

FLUID SUPPORT SYSTEM FOR A MEDICAL PATIENT

Owen Douglas, 7905 - 90th Ave. SW., Tacoma, Wash. 98498

Filed Nov. 16, 1979, Ser. No. 94,980
Int. Cl.³ A61G *7/04;* A47C *27/10*
U.S. Cl. 5—453 **18 Claims**



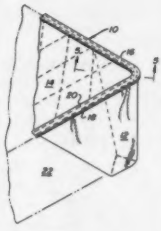
1. A fluid support system comprising a plurality of flexible inflatable cells, the cells arranged in at least one group, each cell having a top portion, a central portion and a lower portion, the top portion being substantially hemispherical in vertical cross-section, the central portion being generally cylindrical and the lower portion tapering downward and inward; a board positioned beneath the cells, each cell connected at its bottom end to the board; a plurality of apertures in the board, an aperture aligned with each cell; means for supplying pressurized fluid to said apertures for inflation of said cells; the cells positioned relative to each other whereby upon inflation, the cells abut at their central portions and deform to a polygonal cross-section when viewed from the top; means for feeding pressurized fluid into spaces between said lower portions of said cells; and a boundary means surrounding a number of cells to define a group, the boundary means forming a lateral seal around the group, whereby the pressure in the sealed spaces between the lower portions of the cells can be made equal to or greater than the pressure on the interior of the cells, causing the cells below a patient resting on the support system to be deflated and to collapse to a level near the board.

4,279,045

CORNER POCKET FOR SECURING MATTRESS COVERS AND THE LIKE

Joseph Vitale, Charlotte, N.C., assignor to PRF Corporation, Monroe, N.C.

Filed Jan. 21, 1980, Ser. No. 113,899
Int. Cl.³ A47G *9/02*
U.S. Cl. 5—497 **3 Claims**



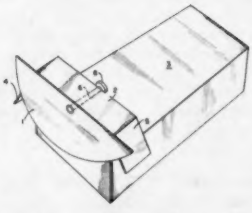
1. A mattress cover for overlying the exposed upper surface of a mattress or box spring comprising a substantially flat panel member secured to said mattress by pocket means at each corner thereof, said pocket means comprising a substantially rectangular flexible member having notches at opposite corners thereof, a first fold wherein said notches overlie each other, a second fold along a line perpendicular to said first fold and bisecting a corner of said notches, and the resulting polygon being fastened together along the exposed sides of said notches and fastened to said mattress cover along the longer side adjacent the sides of said notches.

4,279,046

FOLDAWAY BED CENTER

John E. Comparetto, 108 Cropper St., Chincoteague, Va. 23336, and Richard A. Hamilton, Jr., 1561 Potomac Heights Dr., Oxon Hill, Md. 20022

Filed Apr. 3, 1979, Ser. No. 26,637
Int. Cl.³ A47C *21/04*
U.S. Cl. 5—503 **19 Claims**



1. A foldable writing desk, storage and entertainment center apparatus attachable to the head of a bed comprising

a series of panels attached by hinging mechanisms characterized by a rotatable backboard member attached to a hinged section parallel or near parallel to the bed surface,

a rotational axis means included between the rotatable backboard member and the hinged section,

the rotational axis means comprising an axle which articulates with a dial which is contiguous with the rotated

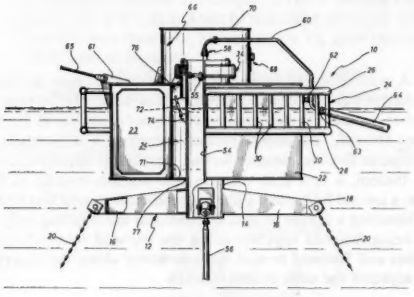
backboard member and in which at the end of the axle opposite the dial a section bracket attaches to the hinged section,
wing units attached to the hinged section,
means to clamp other mechanisms to the bed structure,
means to tilt or rotate the asembly sideways,
means to manually move the wings of the device into position,
modulator cutouts in the panels of the apparatus for insertion of radio, speakers, drawer space, telephone hookups, oxygen hookups, and electrical outlets,
acoustical material attached to the panels for sound insulation,
container sections affixed to the panels,
means to move the entire assembly to and from its closed or storage position.

4,279,047

FLUID TRANSFER BUOY

Willem J. van Heijst, Monaco, Monaco, assignor to Bluewater Terminal Systems N.V., Curaco, Netherlands Antilles

Filed Jan. 18, 1979, Ser. No. 4,343
Int. Cl.³ B63B *21/52*
U.S. Cl. 9—8 P **7 Claims**



7. A fluid transfer buoy for transferring fluid materials to and from a vessel moored thereto comprising:
a frame having a load-bearing shaft;
connection means comprising a lower portion of said frame for connecting said buoy to anchor line extending to a sea floor;
a buoyancy chamber having an opening therein arranged to receive said load-bearing shaft;
a bearing operable to support said buoyancy chamber for rotation about said load-bearing shaft, said buoyancy chamber being operable to buoyantly support said bearing above the surface of a body of water and said buoyancy chamber being operable to rotate about said frame once said frame is connected to anchor lines; and
means for preventing relative rotational movement between said buoyancy chamber and said load-bearing shaft.

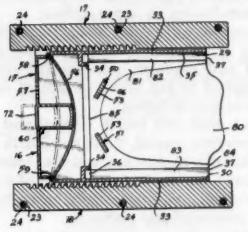
4,279,048

HEEL ASSEMBLY FOR WATER SKI BINDER

Robert Bundschuh, Miami Lakes; George Thorne, Fort Lauderdale, and David Cottis, Winter Haven, all of Fla., assignors to Cypress Gardens Skis, Cypress Gardens, Fla.

Filed Feb. 6, 1980, Ser. No. 118,900
Int. Cl.³ A63C *9/12*
U.S. Cl. 9—310 AA **10 Claims**

1. A heel assembly for a water ski binder comprising a pair of opposed side rails having elongated grooves therein, a base member slidably received within said grooves of said opposed side rails, said base member being generally bifurcated having two elongated channel members with opposing slots formed therein, wall means uniting said channel members and defining an opening therebetween in said base member, at least one lug means integrally formed with said base member and extending therefrom adjacent to said opening in said base member, first locking means carried by said base member for selectively locking said base member to said side rails, a heel member having a heel-engaging portion and edge portions, said edge



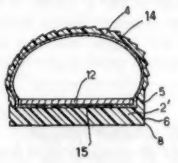
portions being slidably received within said open channel members of said base member so that said heel-engaging portion extends outwardly through said slots, means formed integrally with said heel member for engaging said lug means on said base member, and second locking means on each of said edge portions for interlocking with said channel members, whereby said heel member is secured to said base member without additional fastening means.

4,279,049

PROCESS FOR MANUFACTURING FOOTWEAR FROM A PLASTIC MATERIAL SUCH AS POLYURETHANE

Michel Coiquaud, Bordeaux, France, assignor to Etablissements Simon Souillac, France

Filed Nov. 7, 1979, Ser. No. 91,935
Claims priority, application France, May 29, 1979, 79 13582; Sep. 28, 1979, 79 24217
Int. Cl.³ A43D *9/00*; A43B *3/12*
U.S. Cl. 12—142 S **13 Claims**



1. A process for manufacturing plastic footwear comprising:
a. molding polyurethane into the shape of footwear, having at least a sole portion and an upper portion designed to at least partially cover a foot, by utilizing a mold having a textured surface to imitate a traditional material, said upper portion and said sole portion being molded together;
b. painting each portion of the shape in the color of a traditional material;
c. brushing the shape in a manner as real leather is tanned.

4,279,050

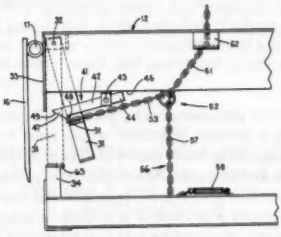
LEG LATCH FOR IN-PIT DOCK LEVELERS

Ronald E. Abbott, Marion, Ohio, assignor to Overhead Door Corporation, Dallas, Tex.

Filed Nov. 29, 1979, Ser. No. 99,112
Int. Cl.³ E01D *1/00*
U.S. Cl. 14—71.3 **11 Claims**

10. In a dock leveler having a base structure, a ramp struc-

ture hinged at its rear edge to the base structure and movable from a generally horizontal position to upwardly and downwardly inclined positions, a lip plate hingedly connected to said ramp structure adjacent the front edge thereof and swingably movable between pendent and extended positions, an extending mechanism connected to said lip plate for automatically moving same into said extended position in response to upward swinging of said ramp structure from said horizontal position into a raised position wherein the ramp is substantially upwardly inclined, support means coacting between said ramp and base structures for supporting the ramp structure in said generally horizontal position, said support means including a first support fixedly secured to one of said structures and a second support movably supported on the other of said structures and movable relative thereto between an operable ramp-



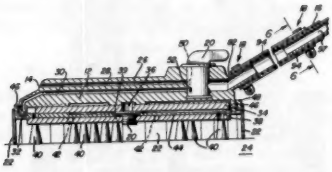
supporting position and an inoperable nonsupporting position, and latch means for retaining said second support in said inoperable nonsupporting position, said second support being normally maintained in said operable position when said latch means is released, the improvement comprising activating means connected to said second support for automatically moving said second support toward said inoperable position for latching engagement with said latch means whenever said ramp structure is swingably moved into said raised position, said activating means being wholly independent of said lip plate and of said extending mechanism, and latch release means fixedly mounted on said one structure and disposed for operative coaction with said latch means to release said latch means from said second support solely when said ramp structure is swingably moved into a lowermost position wherein it is inclined downwardly.

4,279,051

COMBINATION WATER SPRAY AND ROTARY BRUSH ATTACHMENT

Elmer L. Malcolm, Rte. 2, Gentry, Ark. 72734

Filed Aug. 15, 1979, Ser. No. 66,558
Int. Cl.³ A46B *13/06*
U.S. Cl. 15—29 **8 Claims**



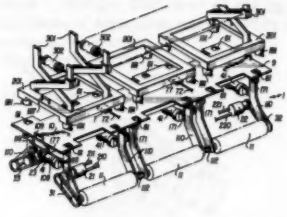
1. A combination water spray and rotary brush attachment for cleaning a surface by spraying or brushing, the attachment being connected to a source of water supply under pressure for forming the spray and for powering the brush, wherein the attachment comprises housing means for receiving water under pressure, spray means communicating with a spray water line contained within the housing means, and brushing means communicating with a brush water line attached to the housing means and including a brushing assembly and water powered drive means connected to the brushing assembly for imparting rotary motion to the brushing assembly, control means on the housing for switching the direction of water from said spray means to said brush means, the drive means being powered by water supplied through the control means and the brushing assembly being lubricated by water also used to power the drive means, said control means comprising a hollow cylindrical body provided with a pair of spaced water control outlets, one of said outlets for directing water to said spray water line and the other of said outlets for directing water to said brush water line, said body being further provided with a water intake port for introducing water into said hollow cylindrical body, whereby the direction of the water introduced into said hollow body can be controlled to flow into the spray water line or said brush water line, said drive means comprising a power disk having about its periphery a plurality of pockets, the pockets receiving water from said brush water line to an inlet in the housing means, whereby the power disk is rotatable to impart rotary motion to the brush assembly, said brush assembly comprising a circular brush plate receiving a plurality of fiber bundles for exerting brushing action, the brush plate being connected by shaft means to the power disk, the housing means further including a bottom plate disposed between the brush plate and the power disk, the bottom plate having a bottom plate orifice for removing water directed into said pockets of the power disk.

4,279,052

FLUE WALL COKE BUILD-UP REMOVAL DEVICE

Gerald D. Evrard, Cannelton, Ind.; Henry S. Cook, Abilene, Tex., and Anthony J. Kamalich, Owensboro, Ky., assignors to Southwire Co., Carrollton, Ga. and National Steel Corp., Pittsburgh, Pa.

Filed Feb. 8, 1980, Ser. No. 119,919
Int. Cl.³ B22D *43/00*
U.S. Cl. 15—93 A **20 Claims**



1. A device for cleaning opposed walls of a furnace pit comprising:

(a) a plurality of rotary means for removing built-up deposits upon each of the opposed walls of the furnace pit;

(b) means for carrying the plurality of removing means;

(c) means, connected to said carrying means, for independently adjusting the speed of the plurality of removing means along each opposed wall of the furnace pit; and

(d) means, connected to said carrying means, for allowing floating adjustment of each of the plurality of removing means against the opposed walls of the furnace pit.

4,279,053

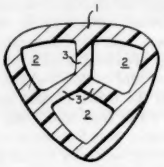
TRI- OR TETRA-LOCULAR PAINT BRUSH BRISTLES

Robert H. Payne, Wilmington, Del., and Robert L. Rackley, Parkersburg, W. Va., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 24, 1979, Ser. No. 78,044
Int. Cl.³ A46B *15/00*
U.S. Cl. 15—159 A **8 Claims**

1. In a monofilamentary paintbrush bristle of thermoplastic

polymeric material having a diameter of about from 4 to 20 mils (0.10 to 0.51 mm), the improvement wherein the filament is tri- or tetra-locular and comprises three or four enclosed, longitudinal, noncircular voids, the voids being separated by



an interior web, the cross-sectional area of the filament having a void content of about from 20 to 50%, and wherein the interior web comprises about from 10 to 25% of the total cross-sectional area of the filament.

4,279,054

SCREEN-WIPER BLADE WITH REPLACEABLE BLADE RUBBER

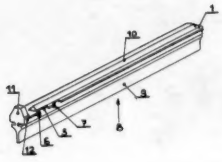
Theodore Hancou, Geneva, Switzerland, assignor to Societe d'Exploitation de Brevets J.B., Fribourg, Switzerland

Filed May 21, 1979, Ser. No. 40,791

Claims priority, application Switzerland, Jun. 2, 1978, 6058/78

Int. Cl.³ B60S *1/38*

U.S. Cl. 15—250.42 **9 Claims**



1. A screen-wiper blade with replaceable blade rubber, comprising

(a) a deformable harness,

(b) pairs of claws on said harness,

(c) a flexible vertebra gripped at the extremities by said claws,

(d) a wiper blade rubber fitted on said vertebra, the said vertebra being constituted by an elongated thin metallic plate having a longitudinal slot over the major part of its length,

(e) a longitudinal bead on said blade facing the harness,

(f) a thin wall disposed in said slot and effecting separation of the bead from the effective blade edge, and

(g) a nipple adjacent one of the extremities of the blade rubber and situated on the same side of the body as the bead, said thin plate having at one extremity a cutaway portion forming a fork and the said nipple is formed at its lower part with a groove facing the extremity of the blade rubber opposite to the said nipple, said fork cooperating with said groove.

4,279,055

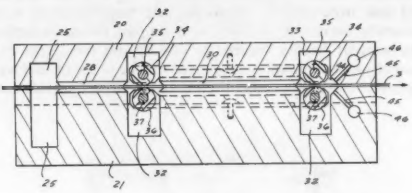
FILM PROCESSING INVOLVING NOXIOUS SUBSTANCE REMOVAL

Hans Jaggi, Ardsley; Pat Mathison, Larchmont, and Paul DeBartolo, New Rochelle, all of N.Y., assignors to PES Photographic Equipment Service Inc., New Rochelle, N.Y.

Filed Sep. 8, 1980, Ser. No. 184,892

Int. Cl.³ B08B *5/02*

U.S. Cl. 15—302 **12 Claims**



1. A device for processing webs, particularly photographic films, carrying a noxious substance which must be removed therefrom, comprising wall means defining a web passage having an inlet and an outlet; first means for applying to opposite major surfaces of a web in the region of said inlet a suction sufficient to remove a portion of a noxious substance on the web; second means intermediate said first means and said outlet for applying to said opposite major surfaces of the web additional suction to remove another portion of the noxious substance; and third means in the region of said outlet for applying to said opposite major surfaces pressurized air flowing in direction towards said second means, so as to force residual noxious substance to the vicinity of said second means for aspiration thereby.

4,279,056

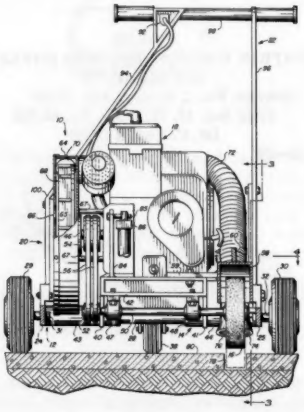
PAVEMENT JOINT AND CRACK CLEANING MACHINE

Carl C. Jacobson, Jr., Tempe, and Gaius P. Crosby, Mesa, both of Ariz., assignors to Crafco, Inc., Phoenix, Ariz.

Filed Nov. 30, 1979, Ser. No. 99,085

Int. Cl.³ A47L *5/14*

U.S. Cl. 15—373 **11 Claims**



1. A machine for cleaning expansion joints or random cracks in a paved surface comprising:

(a) a carriage of open configuration having a spaced pair of side rails, a front cross rail and a rear crossbar;

(b) wheel means on said carriage for movement thereof on

the paved surface and by which said carriage is steeringly manipulated;

(c) a platform pivotably connected on one of its ends to said carriage so as to extend centrally between the side rails thereof, said platform pivotably movable toward and away from the paved surface;

(d) a rotary brush including means for rotatably journaling said rotary brush on the other end of said platform for movement therewith into and out of the joint or crack to be cleaned;

(e) an engine mounted on said platform;

(f) an air blower device connected to said engine and having an air outlet port;

(g) said engine having an output shaft which is coupled to drive said air blower device;

(h) means connected between the output shaft of said engine and said rotary brush for rotational driving thereof; and

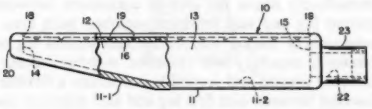
(i) a nozzle including means for coupling thereof to the outlet port of said air blower device, said nozzle mounted on said carriage so that its outlet end is adjacent the rear of said rotary brush and positioned proximate the paved surface.

4,279,057

PORTABLE SPOTTING TOOL FOR CARPETS

Edward A. Restivo, 81 Willowick Dr., Fairport, N.Y. 14450

Filed Mar. 3, 1980, Ser. No. 126,417
Int. Cl.³ A47L *9/02*
U.S. Cl. 15—415 R **9 Claims**



1. A portable spot removing device for fabric covers, comprising a vacuum source,

a hollow, generally flat tool having a plane upper wall, a lower wall spaced beneath and attached to said upper wall, and forward and rear walls, respectively, extending transversely between said upper and lower walls,

said upper wall having therethrough a plurality of spaced apertures, and disposed to be placed horizontally beneath the portion of the fabric cover that is to be cleaned, and

means for connecting said vacuum source to the interior of said tool,

said means comprising a tubular member connected at one end to an opening in said rear wall of said tool, and having its opposite end operatively connected to said vacuum source, and

at least a portion of said lower wall of said tool being inclined upwardly from adjacent said rear wall to said forward wall, whereby the thickness of the tool is tapered adjacent its forward wall to ease its insertion beneath a fabric cover and the item which it covers.

4,279,058

PROCESS FOR REMOVING MEAT FROM BONES

Francis J. Ivey, Chesapeake, Va., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

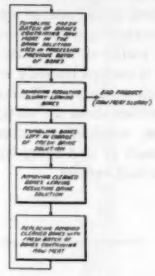
Filed Aug. 2, 1979, Ser. No. 63,287
Int. Cl.³ A22C *17/00*
U.S. Cl. 17—46 **16 Claims**

1. A process for removing residual meat from whole raw bones from which the major portion of the meat has already been removed comprising the steps of:

tumbling a fresh batch of said bones in a brine solution used in processing a previous batch of said bones for a predetermined period of time and below that temperature at which said residual meat is cooked to abrade said residual meat from said fresh batch of said bones by a combined action of said used brine solution and of said fresh batch of said bones falling and rubbing repeatedly upon themselves to form a raw meat slurry;

removing said slurry from said tumbled fresh batch of said bones as an end product of said process;

tumbling said previously tumbled fresh batch of said bones in a fresh brine solution for said predetermined period of time and below that temperature at which said residual meat is cooked to abrade any remaining portions of said residual meat from said previously tumbled fresh batch of said bones by said combined action;



removing cleaned bones from said tumbled fresh brine solution;

replacing said removed cleaned bones with a new batch of said bones; and

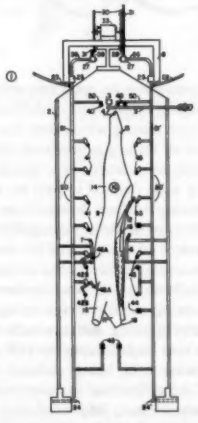
repeating the above process steps.

4,279,059

CARCASS CLEANING UNIT

Maynard E. Anderson, Hallsville; Robert T. Marshall, Columbia, and William C. Stringer, Rocheport, all of Mo., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Nov. 15, 1979, Ser. No. 94,539
Int. Cl.³ A22B *5/00*
U.S. Cl. 17—51 **5 Claims**



1. An apparatus for cleaning carcasses of slaughtered animals for use in combination with a conventional overhead rail and hook carcass conveyor system, said apparatus comprising:

a. a first spray bar assembly adapted for positioning on one

side of said conveyor system and a second spray bar assembly adapted for positioning on the other side of said conveyor system, wherein said first and second spray bar assemblies each comprise a vertically-oriented spray bar and an array of spray nozzles adjustably mounted on said spray bar, wherein each of said spray nozzles is adapted for emitting a planar, fan-shaped spray pattern which applies a substantially uniform force per unit area across the entire carcass surface area it contacts, and wherein said array of spray nozzles is arranged such that a plurality of said fan-shaped spray patterns are substantially contiguous, thereby producing a composite spray pattern which directs foreign matter downwardly and off the surface of said carcass as it sweeps laterally across said carcass; and

b. means for synchronously oscillating said first and second spray bar assemblies about the vertical axes of said respective spray bars, wherein said composite spray pattern produced by each of said spray bar assemblies is swept laterally across said carcass.

4,279,060

METHOD OF AND APPARATUS FOR THE PRODUCTION OF OPEN NON-WOVEN FABRIC FROM FIBROUS MATERIAL

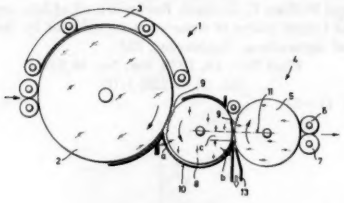
Walter Wirth, Dülmen, Fed. Rep. of Germany, assignor to Hergeth KG Maschinenfabrik und Apparatebau, Dülmen, Fed. Rep. of Germany

Filed Jul. 3, 1979, Ser. No. 54,646

Claims priority, application Fed. Rep. of Germany, Jul. 11, 1978, 2830367

Int. Cl.³ D01G *15/50*

U.S. Cl. 19—106 R **13 Claims**



1. A method of producing an open non-woven fabric from fibrous material comprising the steps of delivering fiber flocks through a carding zone during which time the fiber flocks are loosened and spread to form a non-woven fabric, subjecting the spread-out non-woven fabric to a jamming effect in a converging jamming zone defined in part by a stationary surface opposing a moving surface downstream of the carding zone to form a non-woven fabric of matted fibers, releasing the jamming effect at a downstream end of the stationary surface to form an open non-woven fabric, the releasing step being formed in an area defined by the first-mentioned moving surface and another moving surface in spaced opposed relationship thereto, the latter moving surfaces each being generally cylindrical surfaces and each having an axis of rotation, the length of the releasing area being defined between a line through the axes of the cylindrical surfaces and a downstream end of the stationary surface, and confining the open non-woven fabric during the releasing step by supporting the same through surface portions of the cylindrical surfaces during the rotation thereof from the downstream end of the stationary surface to the line through the axes of the cylindrical surfaces.

4,279,061

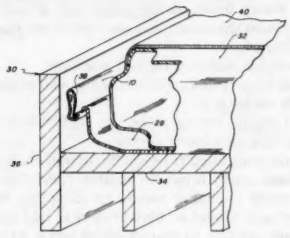
FLEXIBLE SHEET SECURING APPARATUS

Philip J. Santo, 3750 Monroe Ave., Pittsford, N.Y. 14534

Filed Dec. 3, 1979, Ser. No. 99,654

Int. Cl.³ A47C *21/02*

U.S. Cl. 24—72.5 **6 Claims**



1. Apparatus for securing a flexible sheet comprising:

a substantially U-shaped member of resilient material having a web portion, and opposed first and second legs of substantially equal length extending from said web portion, said first leg having a lip directed away from said second leg;

a retention member connected to said second leg at the end of said second leg opposite said web portion, extending across the space between said opposed legs for less than such space, said second leg having a concave curvature immediately above the area of connection between said second leg and said retention member, such area being substantially thicker than either said second leg or said retention member, said retention member having a lip directed toward said second leg, whereby a flexible sheet inserted between said first leg and said retention member is secured when said lip on said first leg is engaged by said lip of said retention member.

4,279,062

SNAP SHACKLE

Michel Boissonnet, Thiers, France, assignor to Societe a Responsabilite Limitee: Wichard, Thiers, France

Filed May 23, 1979, Ser. No. 41,721

Claims priority, application France, Apr. 4, 1979, 79 09230

Int. Cl.³ A44B *13/00;* **B64D** *17/38*

U.S. Cl. 24—305 **11 Claims**

1. A snap shackle comprising:

a shackle body;

an attachment on one said of said of said body, whereby an object can be secured to said one side at said attachment;

a fixed arm extending in one direction from the other side of said body and having an outer end defining an outer pivot axis;

a movable arm pivoted on said outer end of said fixed arm at said outer pivot axis and having a free and engageable with a portion of said body, said movable arm being pivotal about said outer axis between an open position ex-

tending away from said body in said one direction and a closed position forming an eye with said fixed arm and with said free end engaging said portion, whereby another object can be secured to the eye formed by this movable arm;

a retainer stirrup pivotal on said body about a stirrup axis generally parallel to said outer axis and having

a pair of legs each having a pair of ends one of which is formed with a foot pivoted on said body, one of said feet at least lying at said stirrup axis, and

a bight interconnecting the other ends of said legs and displaceable between a holding position with said bight engaging around and said legs flanking said free end in said closed position, and a freeing position disengaged from said free end and permitting said movable arm to pivot freely about said outer axis; and

biasing means for urging said stirrup into said holding position.

4,279,063

CLOTHES PEG

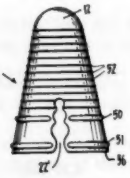
Clive E. Joseph, 1 Church Sq., St. Kilda, Victoria, Australia

Filed Aug. 23, 1979, Ser. No. 69,044

Claims priority, application Australia, Aug. 30, 1978, PD5726

Int. Cl.³ D06F *55/00*; B65D *21/02*

U.S. Cl. 24—138 **5 Claims**



1. A stackable clothes peg having a body portion with an open bottom end, said body portion tapering inwardly and upwardly from said open end so that one peg may be placed over another peg to allow the pegs to be stacked, said body portion having a rib extending at least about a portion of the periphery of said portion, said rib being located intermediate the open end of said peg and a top portion of said peg, said rib projecting outwardly of said body portion, said body portion having a flange adjacent the open end of said body portion, said flange projecting inwardly of said body portion such that a plurality of pegs may be stacked to be releasably locked together by placing one peg over another peg such that the flange on said one peg is forced over the rib on said another peg so that the flange is locked behind the rib and to release the stacked pegs a portion of said another peg adjacent the open end of said another peg is pressed inwardly to release the flange on said one peg from the rib on said another peg, said body portion also having securing means for attaching garments to a clothes line.

4,279,064

COVER-ATTACHING DEVICE FOR A TRUCK, TRAILER OR SIMILAR VEHICLE

Sture B. R. Simme, Maratongatan 39 A, S-531 00 Lidköping, Sweden

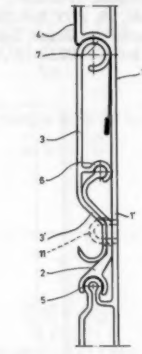
Filed Aug. 10, 1979, Ser. No. 65,424

Claims priority, application Sweden, Aug. 16, 1978, 7808674

Int. Cl.³ A47H *13/00*; A44B *21/00*

U.S. Cl. 24—248 R **8 Claims**

1. A device for releasable attachment of a flexible part, such as a flexible cover, to a solid part, such as a flap, side wall or similar, particularly on a truck, trailer or similar vehicle, characterized by a link section having resilience pivotally attached to the flap by a first pivot, and a locking section having resilience, pivotally attached to a link section by a second pivot formed at its free upper end as to be capable of fastening the cover by engagement with a correspondingly formed rigid part of the flap, the total height of the link section and the locking section being insignificantly greater than the distance between the first pivot and said rigid part of the flap with the cover fastened and, owing to the inherent resilience of the sections, the second pivot being capable, with the cover fastened, of being made to snap across a line between the first pivot and said rigid part to a locking position wherein a flap mates into slots in the locking and link sections, and a flap ring is attached to the flap and, when the device is in the locked position, extends out through the mating slots in the link section and the locking section so as to be able to accommodate a sealing rope.



4,279,065

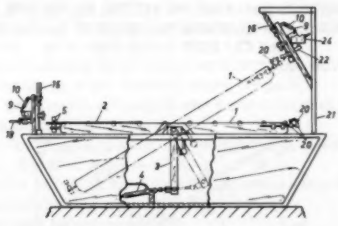
MACHINE DESIGNED TO FILL HOLLOW PROFILE RODS WITH A GRANULAR MATERIAL

Sten Sernevi, Glarhallavägen 4, S-260 43 Arild, Sweden

Filed Oct. 18, 1979, Ser. No. 85,991

Int. Cl.³ B23P *19/02*; B65B *1/06, 7/28*; E06B *3/24*

U.S. Cl. 29—33 K **5 Claims**



1. A machine designed to fill hollow profile rods (2), preferably spacer rods for insulating window panes, with a granular material (23), such as a desiccating agent, and to thereafter seal off the profile rods (2) at both ends, characterised in that the machine comprises conveyor belts (1) arranged on a tiltable frame (3) to displace profile rods (2) positioned in parallel thereon, means (8) to advance strips (7) of a sealing material, a member (15) to cut end pieces (19) from the strips (7), means (17) to press one such end piece (19) into one of the ends of each profile rod (2), means (20) to advance the unsealed ends of profile rods (2) in an obliquely upwards direction into a distribution chamber (22) holding a granular material (23), in which position the granular material (23) flows downwads into the profile rods (2) so as to fill the latter, and means (17) to press

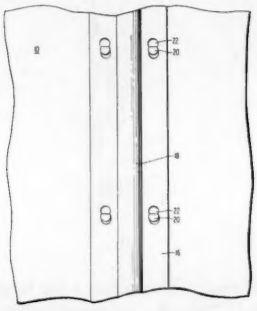
end pieces (19) into said last-mentioned ends of the profile rods (2) after filling thereof.

4,279,066

METHOD OF ATTACHING A SOLAR COLLECTOR PLATE TO A TUBE WATER WAY

Harry J. Riley, Wembley, Australia, assignor to S. W. Hart & Co. Pty. Ltd., Welshpool, Australia

Filed Nov. 28, 1979, Ser. No. 98,414
Claims priority, application Japan, Sep. 4, 1979, 54-133474
Int. Cl.[3] B23P *15/26*
U.S. Cl. 29—157.3 C 6 Claims



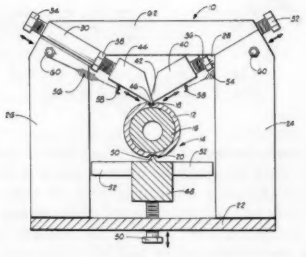
1. A method of attaching a solar collector plate to a tube water way which comprises fluting the collector plate to a diameter appropriate for receiving the tube water way, fluting a backing strip to a diameter substantially the same as the diameter of the fluting of the collector plate, sandwiching the tube water way between the collector plate and backing strip in the fluting thereof, placing the assembly in a press and die, and, in the press and die, punching pierce tags from the collector plate into the backing strip and then closing the pierce tags.

4,279,067

WELL PUMP BREAKING TOOL

Harry E. Jenks, P.O. Box 742, Elkhart, Kans. 67950

Continuation-in-part of Ser. No. 915,789, Jun. 15, 1978, Pat. No. 4,216,625. This application Sep. 28, 1979, Ser. No. 80,087
Int. Cl.[3] B23P *19/00;* B26F *3/00*
U.S. Cl. 29—239 6 Claims



6. A well pump breaking tool for engaging an upper and lower elongated slot cut along the length of a barrel of a well pump, the barrel surrounding a hollow plunger, the well pump breaking tool comprising:

a base plate;

first and second vertical arms mounted on opposite sides of the base plate and extending upwardly therefrom;

a horizontal strap, the ends of the strap attached to the top of the first and second vertical arm;

a well pump support mounted above the center of the base plate and between the first and second arms, the support having a pointed protuberance extending upwardly therefrom, the lower slot in the barrel received on top of the protuberance, the barrel and plunger resting thereon;

first and second bolt collars mounted on top of the first and second vertical arms, the collars angled downwardly toward the center of the base plate;

first and second adjustment bolts received in the first and second collar;

first and second well pump jaws having pointed end portions, the jaws attached to the adjustment bolts, the pointed end portions of the jaws received in the upper slot of the barrel, by threading the adjustment bolt downwardly the pointed end portions apply pressure on opposite sides of the upper slot until the barrel is broken along the length of the upper slot thereby releasing hollow plunger from the barrel; and

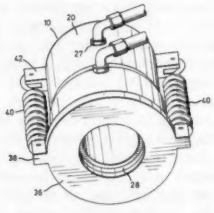
a third adjustment bolt threadably received through the center of the base plate and attached to the bottom of the well pump support, by threading the third adjustment bolt upwardly and downwardly the well pump support is adjusted vertically on top of the base plate for receiving different sizes of well pumps.

4,279,068

PORTABLE HYDRAULIC GEAR PULLING DEVICE

Joseph Altmayer, Kitchener, Canada, assignor to E & E Seegmiller Limited, Kitchener, Canada

Filed Dec. 4, 1979, Ser. No. 100,248
Int. Cl.[3] E21B *19/00*
U.S. Cl. 29—252 2 Claims



1. A fluid gear or like pulling device comprising

a body having a through axial bore adapted to admit a shaft;

opposed piston chambers extending radially of said bore;

pistons in said piston chambers and having a free end adapted to enter into said through bore;

means for pressurizing said piston chambers with fluid to force said pistons outwardly of their chambers and into said through bore;

a press ram mounted in said body for movement axially thereof;

and means for moving said press ram axially of said body said body being sleeve shaped, said piston chambers extending through said sleeve shaped body from outside to inside, the outer end of said chambers being formed by the inner side of a ring that extends around the outside of said body.

4,279,069

FABRICATION OF A NONVOLATILE MEMORY ARRAY DEVICE

Moiz M. E. Beguwala, Placentia, and Francis M. Erdmann, Anaheim, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Feb. 21, 1979, Ser. No. 13,351
Int. Cl.³ H01L *21/26*
U.S. Cl. 29—571 **7 Claims**

1. Forming a memory array having fixed threshold MOS and memory MNOS devices by the process of

defining active device regions of semiconductor material of a substrate,

diffusing dopants into portions of said active regions to form source and drain regions therein,

producing a first dielectric layer over the channel portions of said active regions between the source and drain regions in said active regions,

producing a first layer of conductive material over said first dielectric layer,

removing said first dielectric layer and said first conductive layer from the regions to be formed into MNOS memory devices,

said first layer of conductive material and first dielectric layer remaining over the active regions of the MOS defined regions,

producing a second dielectric layer of ultra-thin oxide over the MNOS channel portions of said active regions from which said first dielectric layer and said first conductive layer have been removed,

producing a third dielectric layer of nitride over the array,

producing a second layer of conductive material over said third dielectric layer,

removing portions of said third dielectric layer and said second layer of conductive material from the regions where the MOS devices are formed which are areas different from the first mentioned removing step,

producing a protective masking layer over the first and second conductive layers to be used to define the channel regions of said devices which will become the active channel regions,

providing dopants to said channel region of all of said active regions between the edge of said protective masking layer and the respective edge of the associated source and drain regions, and

establishing electrical connections to each source, gate and drain region.

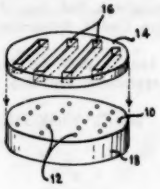
4,279,070

METHOD OF MAKING INTEGRATED WAVEGUIDE CAVITIES

Chente Chao, Minnetonka, Minn.; Edward M. Nakaji, and Robert L. Bernick, both of Torrance, Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 4, 1980, Ser. No. 127,017
Int. Cl.³ H01P *11/00*
U.S. Cl. 29—583 **6 Claims**

1. A process for fabricating integrated waveguide cavities comprising the steps of: forming a semiconductor device on one side of a wafer; bonding a heat sink to the opposite side of the wafer away from said device; forming a slot in a metal having a thickness equal to a desired waveguide height; placing the metal plate over the surface of the wafer and aligning said slot with said semiconductor device; thermal compression bonding the plate to the wafer, and separating the semiconductor-waveguide cavity module from the remainder of the wafer package by cutting.

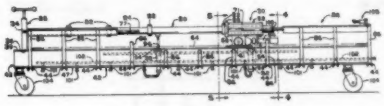


4,279,071

APPARATUS FOR INSTALLING ROLLS ON A CONVEYOR SHAFT

Tom J. Lord, Athens, Ga., and William V. Snyder, Carlisle, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Mar. 22, 1979, Ser. No. 22,906
Int. Cl.³ B23Q *15/00*; B23P *21/00*
U.S. Cl. 29—717 **9 Claims**



1. An apparatus for positioning a ring made of a resilient, flexible material on an elongated shaft to provide a roll for conveying articles wherein an outer peripheral dimension of the shaft is equal to or greater than the inner peripheral dimension of the ring at the time of positioning the ring on the shaft, comprising:

means for securing the shaft in a predetermined path against movement in a first direction along the path;

means for supporting the shaft intermediate the shaft ends to maintain the shaft in the path;

means for displacing said supporting means toward and away from the path;

means for urging the ring in the first direction along the path to move the ring over the shaft;

a drive rack having grooves;

means including projections means for incrementally engaging the grooves of said rack;

means for mounting said rack on said urging means and said engaging means along the path with said projection means of said engaging means movable in said grooves of said drive rack;

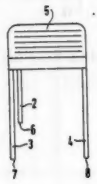
motor means for moving said drive rack and said engaging means relative to one another to move said urging means in the first direction along the path; and

means responsive to said urging means for acting on said displacing means to move said supporting means away from the path as said urging means moves along the path toward said supporting means and to move said supporting means toward the path as said urging means moves along the path away from said supporting means.

4,279,072
ARRANGEMENT FOR THE DISASSEMBLY OF A CIRCUIT BOARD

Roland Maurer, Lauterbach, Fed. Rep. of Germany, assignor to Gebruder Junghans GmbH, Schramberg, Fed. Rep. of Germany

Filed Aug. 22, 1979, Ser. No. 68,598
Claims priority, application Fed. Rep. of Germany, Sep. 12, 1978, 7827034[U]
Int. Cl.³ H05K 3/00
U.S. Cl. 29—764 5 Claims



1. A device for use with a housing of an electrical instrument for ejecting from such housing a modular drive means including a circuit board and electromechanical and electronic components carried by said board, the latter coupled by frictional forces to the housing, said device including a plurality of ejecting posts which are sized to be pushed through corresponding openings in a wall of the housing to press against said drive means to overcome said frictional forces and eject said board together with said components from said housing.

4,279,073
METHOD FOR RELEASING PRINTED WIRING BOARDS FROM PRINTED WIRING BOARD RACKS

Marvin Packer, Broomall, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 10, 1979, Ser. No. 101,486
Int. Cl.³ H05K 3/34
U.S. Cl. 29—832 5 Claims

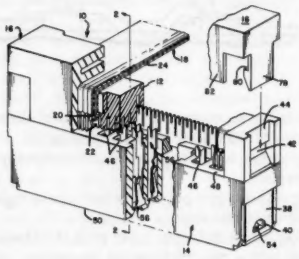
1. In a process of assembling printed circuit boards without lead clinching of the components to the printed circuit board which comprises coating a side of the printed circuit board into which the electronic components are inserted with a sprayable, non-flowing, water soluble adhesive composition, inserting the coated board in a printed circuit board rack, removing the printed circuit board, inserting the electronic components therein, and storing the printed circuit board containing the components in the printed circuit board rack prior to soldering the components thereto, the improvement comprises:

coating the printed circuit board racks with a water rinsable, non-corrosive composition which is compatible with the non-flowing water-soluble adhesive composition comprising about 100 parts by weight of a polyethylene glycol having a molecular weight range of from about 3000 to about 3700, 20 to about 200 parts by weight of a polyethylene glycol having a molecular weight range of from about 380 to about 420 and from about 0 to about 35 parts by weight of water.

4,279,074
METHOD OF TERMINATING FLAT MULTI-CONDUCTOR TRANSMISSION CABLE

Dale R. Zell, Elizabethtown, and Leroy J. Morningstar, Middletown, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Division of Ser. No. 939,756, Sep. 5, 1978. This application Nov. 1, 1979, Ser. No. 90,362
Int. Cl.³ H01R 43/04
U.S. Cl. 29—866 3 Claims



1. A method of terminating flat, multi-conductor transmission cable of the type having at least one ground conductor between adjacent signal conductors, all said conductors being secured in fixed, parallel, closely spaced relationship within and insulating web, said method comprising:

transversely slitting said insulative web at a position spaced from the end of the cable and displacing said insulating web to expose said ground and said signal conductors;

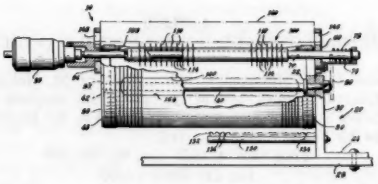
seating said exposed conductors in a cable engaging face of a connector cover member having a plurality of parallel conductor alignment channels therein, alternate ones of said channels having greater depth and receiving said ground conductors therein, and simultaneously cutting said exposed conductors to length to provide a proper mass termination of said transmission cable; and

applying a connector housing to said cover with terminals and a bussing bar carried by said housing effecting termination of the signal and ground conductors, respectively, and latching said cover and housing together.

4,279,075
METHOD AND APPARATUS FOR MAKING A WIRE STYLUS BOARD

Joachim C. Bronder, Trumbull, Conn., assignor to Burroughs Corporation, Detroit, Mich.

Filed Sep. 14, 1979, Ser. No. 75,589
Int. Cl.³ H01R 43/00; B23P 23/00
U.S. Cl. 29—872 11 Claims



1. The method of making a wire stylus board comprising

winding a number of turns of a wire on a drum,

securing a portion of each wire to a support strip on said drum,

cutting groups of said wires simultaneously,

removing the cut wires from the surface of the drum, and

connecting their ends together to form a single terminal whereby electrical signals can be connected to all of said cut wires at the same time.

4,279,076
SCISSORS

Dennis B. Jackson, Nunawading, Australia, assignor to Wiltshire Cutlery Company Proprietary Limited, South Melbourne, Australia

Filed Nov. 19, 1979, Ser. No. 95,270
Int. Cl.³ B26B *13/00*; B21K *11/00*
U.S. Cl. 30—254 **6 Claims**

1. Scissors including, two blades, pivot means connecting the two blades for relative movement between opened and closed conditions of said scissors, each said blade having:

inner and outer substantially parallel broad surfaces, the inner broad surfaces of said blades being in opposed relationship,

a working surface;

a raked surface being interposed between each said working surface and the said outer surface of the respective said blade, the included angle between said raked surface and the said inner surface being less than the included angle between the inner surface and the said working surface, and

a cutting edge and a back edge which respectively form opposite longitudinal edges of said blade, the cutted edge of each said blade being defined at the junction of the respective said inner and working surfaces of said blade and the width of the inner surface of each blade being such that the cutting edge of the blade is at least level with the back edge of the other said blade in the closed condition of said scissors and each said cutting edge being disposed at and following the path of the back edge of the other blade in said closed condition.

4,279,077
POCKET CAN OPENER

William L. Freeman, Salt Lake City, Utah

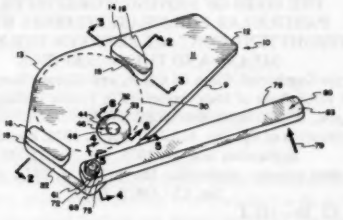
Continuation of Ser. No. 938,574, Aug. 31, 1978, abandoned. This application Apr. 21, 1980, Ser. No. 141,822
Int. Cl.³ B67B *7/30*
U.S. Cl. 30—442 **9 Claims**

1. A non-extensible, non-retractable portable can lid removing device having fixed pivotable features only comprising:

flat body means, manual bias applying clamp means and an eccentric pivot site relatively pivotably uniting the flat body means and the manual bias applying clamp means;

the flat body means comprising an essentially circular region having an area substantially equal to the area of a can of predetermined diameter adapted to be received at said circular region having a plurality of non-rotatable abutment means along a fixed radius co-axial with said essentially circular region adapted to contiguously slidably engage a portion of the top edge of the bead at the one end of the can;

the clamp means comprising pivotable non-extensible lever means by which the clamp means are relatively displaced pivotably inwardly between an open position and a second closed position, the clamp means also comprising non-rotatable abutment means slidably engaging the outside portion of the bead in the closed position along the periphery of the circular region, the engaging means being remote from the eccentric pivot site;

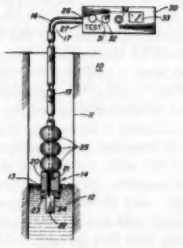


lid cutting means carried directly adjacent the flat body means in such a position as to have its cutting edge superimposed upon the periphery of said circular region to cut the lid from the can upon adequate relatively manual rotation of the can and the device when one end of the can is correctly positioned over the circular region and the clamp means of the device are in the closed position.

4,279,078
FLUID PRESENCE DETECTOR

Stanley E. Hinshaw, and Charles F. Cole, Jr., both of Ponca City, Okla., assignors to Conoco, Inc., Ponca City, Okla.

Filed Feb. 12, 1980, Ser. No. 120,946
Int. Cl.³ G01F *23/04*
U.S. Cl. 33—126.5 **2 Claims**



1. A water level indicator circuit used in cooperation with a probe attached to a long wire, said probe having first and second electrodes for contacting the surface of the water with first and second leads communicating from said first and second elctrodes, respectively, to an input of said indicator circuit, an improved indicator circuit comprising:

(a) a low current high gain transistor means having a collector, an emitter, and a base,

(b) a power source having sufficient potential to properly reverse bias said low current high gain transistor means when said probe is not contacting said water and sufficient voltage to properly forward bias said low current high gain transistor means when said probe is contacting said surface of the water,

(c) a meter,

(d) current adjusting means,

(e) means for coupling in series said power source, meter, current adjusting means and the collector and emitter of said low current high gain transistor, and

(f) means for resistively coupling one of said electrodes to said power source and said remaining electrode to said negative terminal of said power source and to the base of

said transistor through a resistance signal to bias said transistor to cutoff whereby when said electrodes are out of water said transistor is at cutoff and when said electrodes are in water said transistor is fully conductive.

4,279,079

DIRECT FEELING GAGE FOR THE MEASUREMENT OF THE SIZES OF MOVING WORKPIECES, IN PARTICULAR FOR MEASUREMENTS WITH INTERMITTENT CONTACT BETWEEN THE FEELING MEANS AND THE WORKPIECE

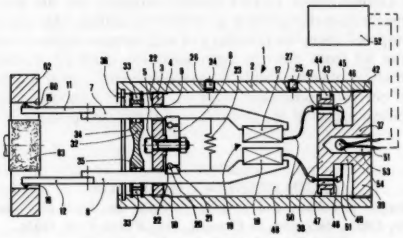
Giorgio Gamberini, Pieve Di Cento, and Giorgio Bozzoli, Corpo Di Reno, both of Italy, assignors to Finike Italiana Marposs S.p.A., S. Marino di Bentivoglio, Italy

Continuation of Ser. No. 513,393, Oct. 9, 1974, abandoned. This application Sep. 14, 1979, Ser. No. 75,747

Claims priority, application Italy, Oct. 25, 1973, 3521 A/73

Int. Cl.³ G01B 7/12

U.S. Cl. 33—149 J **9 Claims**



1. Gage for the measurement of the sizes of moving workpieces comprising: an outer casing defining an internal chamber and first and second passage surfaces connecting the internal chamber with the space outside the casing; support means located in said chamber and fixed to the casing; at least one mobile arm supported by the support means, said arm including a first section located in said chamber and a second section, projecting outside said casing through said first passage surfaces; a feeler fixed to said second section for contacting the workpieces to be measured; a measuring transducer coupled to said mobile arm, said transducer including an element fixed to said first section of the arm; supply and detecting means for said transducer; connecting means for connecting the tranducer to the supply and detecting means, said connecting means passing through said second passage surfaces; first sealing means for sealing said first passage surfaces while permitting the movement of said mobile arm; second sealing means for sealing said second passage surfaces; a viscous fluid filling said internal chamber; and wherein said first section and said transducer element have large facing surfaces adapted to displace a quantity of viscous fluid, upon movements of the arm, to obtain a damping effect on the arm, due substantially to paddling action, for permitting the measurement of workpieces having discontinuous surfaces and measurements involving an intermittent contact between said feeler and the workpiece.

4,279,080

TOUCH SIGNALLING PROBE

Tadao Nakaya, Utsunomiya, Japan, assignor to Mitutoyo Mfg. Co. Ltd., Tokyo, Japan

Filed Aug. 26, 1980, Ser. No. 181,657

Claims priority, application Japan, Aug. 28, 1979, 54-118251[U]

Int. Cl.³ G01B 7/02

U.S. Cl. 33—174 L **1 Claim**

1. A touch signalling probe comprising:

a probe shaft having a pointed end;

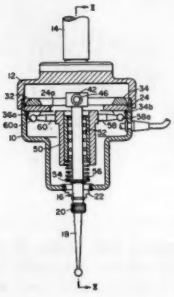
a touch sensor on the pointed end of said probe shaft;

a insulated contact base plate fixed to a probe case and having an aperture in the center through which said probe shaft can be penetrated;

two sets of upper contact pair attached on the upper side of said insulated contact base plate, each set of which has two contact members arranged in the vicinity in the insulated state, and which are symmetrically located with respect to said probe shaft;

two sets of lower contact pair attached under the reverse side of said insulated contact base plate, each set of which has two contact members arranged in the vicinity in the insulated state, and which are located in the direction of a right angle against said two sets of upper contact pair;

two upper contact arms insulatedly fixed to said probe shaft,



and keeping contact over with each of contact members of both said upper contact pairs;

a probe tube slidingly moving along said probe shaft;

two lower contact arms insulatedly fixed to said probe tube and keeping contact over with each of contact members of both said lower contact pairs;

a spring insulated between said probe shaft and said probe tube in order to provide urging force by which said upper contact arms and said lower contact arms put to maintain said upper contact pairs and said lower contact pairs between said upper contact arms and said lower contact arms; and

detecting lead wires connecting said respective contact members in series.

4,279,081

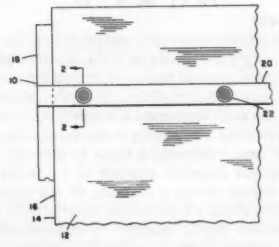
WALLBOARD T-SQUARE

Steven D. Wing, East Amherst, and Richard E. Smith, Williamsville, both of N.Y., assignors to National Gypsum Company, Dallas, Tex.

Filed Oct. 2, 1979, Ser. No. 81,138

Int. Cl.³ B43L 7/02

U.S. Cl. 33—479 **2 Claims**



1. An improved T-square comprising an edge abutting portion and a main elongate body portion extending at an angle to

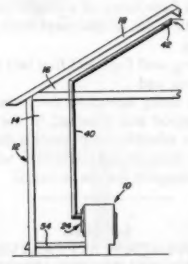
said edge abutting portion, said body portion having at least one retractable pin assembly mounted thereon, said pin assembly including a small diameter sharp pin and means for lowering and retracting said pin, whereby said pin may be lowered sufficiently to push said pin into a board disposed under said body portion and may be retracted sufficiently to withdraw said pins to above the bottom side of said body portion, said means for lowering and retracting said pin being comprised of a hollow retainer, an axially movable insert in said retainer, said pin being mounted in the bottom of said insert, said insert including a post extending radially outward from the side thereof, said retainer including an axially extending recess in an inner wall and a short sidewardly extending recess connected with said axially extending recess, said pin being slidably disposed within said recesses, and spring means disposed to retract said movable insert and said pin when said post is disposed in the axially extending recess and to be held in a restrained position when said post is disposed in the short sidewardly extending recess.

4,279,082

SOLAR ASSIST AND FILTER CONSTRUCTION FOR DRYER INLET

Buck C. Commander, Rte. 11, Box 461-A, Pensacola, Fla. 32504

Filed Oct. 19, 1979, Ser. No. 86,577
Int. Cl.³ F26B *11/04*
U.S. Cl. 34—82 **2 Claims**



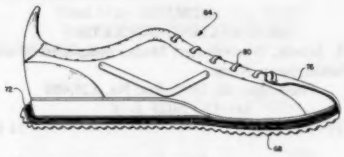
1. In combination with a building having a first closed interior portion to be heated and/or cooled relative to the exterior of said building and a second interior portion vented to the exterior of the building and subject to heating through direct or indirect solar energy heating thereof, a dryer disposed in said first interior portion and including an air inlet and an air outlet, said air outlet being ducted to the exterior of said building, an air inlet manifold for said air inlet and including a pair of intake air openings, valve means for selectively inversely opening and closing said intake openings, one of said air intake openings opening into said first interior portion and air passage means communicating the other air intake opening with said second interior portion, said dryer including one wall thereof through which said air inlet opens, said manifold including an open sided housing secured over the exterior surface of said one wall of said dryer through which said air inlet opens, said housing including an interior air filter panel dividing the interior of said housing into first and second compartments, said inlet opening into said second compartment and said pair of intake openings opening into said first compartment, said panel comprising means for filtering air entering said first compartment and passing through said panel into said second compartment.

4,279,083

SHOE CONSTRUCTION WITH REPLACEABLE SOLE

Carl W. Dilg, 1715 N. 500 East, Provo, Utah 84601

Filed Feb. 1, 1980, Ser. No. 117,576
Int. Cl.³ A43B *3/24*
U.S. Cl. 36—101 **9 Claims**



1. A shoe construction comprising

a shoe body having an upper portion which fits about the top of a foot, and a lower portion which is joined at its perimeter to the upper portion and which fits under the foot,

a first layer of material permanently fixed at its upper side to the undersurface of said lower portion of the shoe body and having a perimeter which is contiguous with the perimeter of the lower portion of the shoe body, the side of said first layer which faces downwardly including a layer of attachment means having a perimeter substantially contiguous with said first layer perimeter for attaching to and detaching from a second corresponding layer of detachable material,

a layer of detachable material, one side of which includes a layer of attachment means having a perimeter substantially contiguous with said first layer perimeter for attaching to and detaching from the first layer of material, and

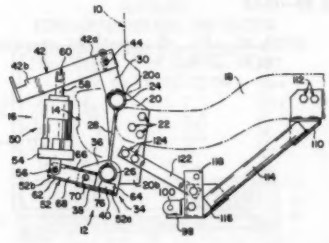
a shoe sole permanently fixed to the other side of said second layer of material.

4,279,084

SNOWPLOW BLADE LIFT MOUNT ASSEMBLY

William H. Low, Chardon; Vernon L. Hetrick, North Olmsted, and Paul McCoy, Lyndhurst, all of Ohio, assignors to Meyer Products, Inc., Cleveland, Ohio

Filed Nov. 15, 1979, Ser. No. 94,818
Int. Cl.³ E01H *5/04*
U.S. Cl. 37—42 R **33 Claims**



1. A plow blade lift mount assembly mountable on the front of a vehicle including longitudinally extending vehicle frame members having front ends and laterally extending bumper means at said front ends of said frame members, comprising support means mounted on said frame members behind said bumper means and having upper and lower ends with respect thereto, lift arm means pivotally interconnected with said upper end of said support means and extending forwardly over said bumper means, support arms means on said lower end of said support means and extending forwardly below said bumper means, extendable and retractable lift arm actuating means forwardly of said bumper means and having opposite ends pivotally interconnected one with said support arm means and the other with said lift arm means, fastening means releasably

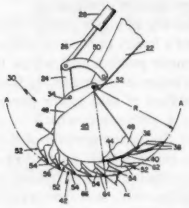
connecting said support arm means with said support means, and removable pivot pin means pivotally interconnecting said lift arm means and said support means, said fastening means and pivot pin means being located behind a vertical plane tangent to the forwardmost edge of said bumper means.

4,279,085

EXCAVATING BUCKETS

Carroll H. Arnold, Westminster, Mass., assignor to Wain-Roy, Inc., Hubbardston, Mass.

Filed Mar. 10, 1980, Ser. No. 129,489
Int. Cl.³ E02F 3/76
U.S. Cl. 37—103 **11 Claims**



1. In an excavating bucket including two sides and a curved bottom connecting said sides, said bottom having a front scooping edge, that improvement comprising:

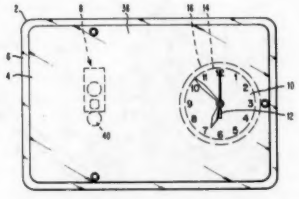
a plurality of rippers protruding downwardly from said bottom and facing towards said scooping edge, said rippers being staggered at varying distances from said edge towards the back of said bucket and at varying distances from the sides of said bucket.

4,279,086

DECORATIVE PANEL AND HANGING DEVICE THEREFOR

Orville Phillips, 524 E. 20th St., New York, N.Y. 10009

Filed Jul. 30, 1979, Ser. No. 61,848
Int. Cl.³ G09F 1/12
U.S. Cl. 40—152.1 **7 Claims**



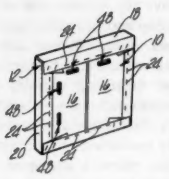
1. A decorative panel comprising two transparent sheets, a face sheet and a rear sheet, one upon the other, means for removeably retaining a sheet of display material between said transparent sheets without securing means visibility from the front of said panel, hanging means, a first hanging means rotatable about 360° and extending from the back of said rear sheet, means for securing said first hanging means against rotation at a desired position, and second hanging means spaced from said first hanging means, said second hanging means comprising a device rotatably secured to the rear of said panel, said means for holding said device against rotation in a desired position, adjustable means carried on said device for adjustably moving a hanging strap means in a lateral direction with respect to means rotatably securing said device to the rear of said panel.

4,279,087

BOX FRAME FOR FABRIC PRINTS AND THE LIKE

Andrew S. Crawford, 523 Sunset Rd., Ann Arbor, Mich. 48103

Filed May 7, 1979, Ser. No. 36,479
Int. Cl.³ G09F 1/12
U.S. Cl. 40—158 R **8 Claims**



1. Display apparatus for providing a rigid mounting for display of flexible material items such as fabric prints and the like, said apparatus comprising:

a closed three-dimensional polygonal box formed of folded sheet material, said closed polygonal box including a front surface area formed by the outer surface of a central region of said sheet material;

a corresponding number of box sides extending rearwardly of said front surface formed by portions of said sheet material folded together away from said central region;

oppositely extending flap pairs formed by sections of said sheet material contiguous to said folded box sides and folded to extend toward each other and spaced from said central region, at least one flap pair including flap tabs consisting of inwardly bent folded portions of each of said flaps of sufficient depth and length to engage substantially the full width of the inside of said central region parallel to said sides, said flaps being of a length to position said flap tabs on opposite flaps in abutment with their outer juxtaposed surfaces;

means for securing said flaps and flap tabs in their respective folded positions; and

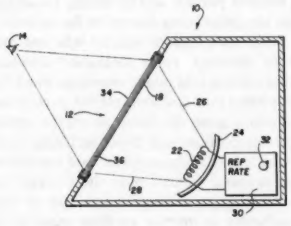
flexible material being stretched over the front surface of said central region and attached to the flap pairs on the rear of the box whereby to provide a display in combination with the three-dimensional box which serves as an integral rigid support for the material.

4,279,088

VISUAL STIMULATION APPARATUS USEFUL IN THERAPEUTIC TREATMENT

Robert W. Hyre, 4056 Brookfield Cir., Chattanooga, Tenn. 37412

Filed Nov. 15, 1979, Ser. No. 94,673
Int. Cl.³ G09F 13/04
U.S. Cl. 40—442 **5 Claims**



1. Visual stimulation apparatus useful for therapeutic treatment of psychological and psychic disorders by inducing information in a patient's memory system which is deemed by the patient to be self derived, comprising in combination,

display means presenting a visual message at a viewing plane

consciously visible to a viewer by an afterglow mechanism of the eye with a message content acceptable to the viewer,

and means displaying the message to the viewer making it visible only with light flashes of a duration and repetition rate insufficient in view of the persistance of the eye to cause said message to persist and with sufficient intensity to cause the message to leave a perceptible afterglow image in the viewer's eye mechanism and of short enough duration and contrast that the context of the visual message affects the subconscious mind of the viewer but is visible consciously only by the afterglow phenomenon, wherein the visual message comprises an overt and a covert portion both of a motionless printed message type, wherein the covert portion is not consciously visible to the viewer in said afterglow, wherein the first overt message is displayed at said plane upon a partially opaque surface such as paper that is made transparent by a bright light directed therethrough, said second covert message is displayed on a second surface behind said opaque surface, and the means including the light displaying the messages flashes a lamp at a high intensity to display the overt message at highly visible intensity at said viewing plane, and wherein the covert message is on a similar partially opaque surface such as paper, and including means lighting the viewing surface of the first message at said viewing plane sufficiently to comfortably view the message displayed thereon without displaying the covert message.

4,279,089

OPTICAL ILLUMINATION DEVICE

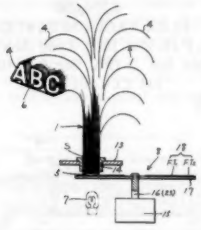
Tatsuo Murakami, 522 Kamiumamachi, Sanchome, Higashioji Higashiiru, Shibutanidori Higashiyama-ku, Kyoto, Japan

Filed Sep. 6, 1979, Ser. No. 73,012

Claims priority, application Japan, Jul. 11, 1978, 53/137624; Sep. 8, 1978, 53/124255[U]

Int. Cl.³ G09F *13/18*

U.S. Cl. 40—547 **3 Claims**



1. An optical illumination device having a plurality of optical fibers comprising

adjacent fibers abutting each other in a linear arrangement and each having a light receiving end and an illuminating end;

an integral band member having a shape that varies in direction along its length to form a predetermined indicia forming configuration;

said band having an outer edge located at said illuminating ends of said fibers so that said band extends coterminous with said fibers for a substantial distance;

said band having an outer surface to which said abutting fibers are fastened, which surface is in a plane perpendicular to the plane of said illuminated ends of said fibers, whereby said fiber arrangement forms the same predetermined configuration as said band member; a flat surface, indicia forming member is provided having outer edges formed in the same shape as said predetermined configuration, said flat surface member connected to said outer edge of said band member at an angle perpendicular thereto whereby said fibers are arranged along the periphery of said flat surface member thereby providing an illuminated outline of said member when said fibers are illuminated.

4,279,090

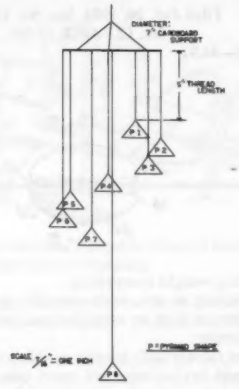
ENERGY RELEASING NOVELTIES

Manley R. Shofner, and Lenora M. Huett, both of P.O. Box 1041, Pioneer, Calif. 95666

Filed May 2, 1979, Ser. No. 35,327

Int. Cl.³ G09F *7/22*; A63H *1/32*

U.S. Cl. 40—617 **2 Claims**



1. A new article of manufacture comprising a mobile consisting of a circular support, a plurality of pyramid shapes depending at different levels and at equally spaced apart points from the circumference of said circular support in spiral arrangement and wherein the bottom edge of each pyramid shape in said spiral arrangement is level with the peak of the succeeding pyramid shape of said plurality of pyramid shapes and wherein said circular support is maintained in a horizontally level position, and a base pyramid shape depending from the center of said circular support below said plurality of pyramid shapes for receiving energy released therefrom.

4,279,091

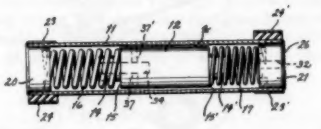
FIREARM RECOIL REDUCER

Jesse B. Edwards, 269 Herbert St., Alton, Ill. 62002

Filed Dec. 3, 1979, Ser. No. 99,557

Int. Cl.³ F41C *27/00*

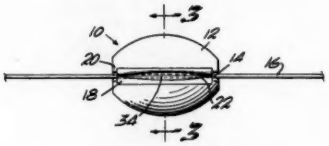
U.S. Cl. 42—1 V **10 Claims**



1. In combination with a firearm having components including a barrel, a receiver, and stock integrated into fixed relationship so that no relative movement between said firearm components may occur when firing, a recoil reducing mechanism disposed within said stock, said mechanism comprising housing means forming a sleeve having one end directed toward said receiver and an opposite end directed away from said receiver, closures at the opposite ends of said sleeve, a pair of radially projecting lugs externally of said sleeve at the opposite ends thereof and on opposite sides thereof, a piston slideably received within said sleeve for slideable movement therein

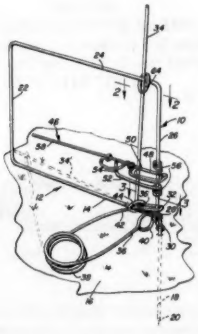
upon recoil of said firearm when firing, and resilient means for biasing said piston into a central position between the opposite ends of said sleeve, a reservoir within said piston for containing a quantity of lubricant, and means for supplying said lubricant from said reservoir to an outer surface of said piston for providing lubricant between said piston and sleeve.

4,279,092
FISHING WEIGHT
Duane Hutson, 1315 Country Club Prado, Coral Gables, Fla. 33134
Filed Jan. 24, 1980, Ser. No. 114,895
Int. Cl.³ A01K *95/00*
U.S. Cl. 43—44.91 **17 Claims**



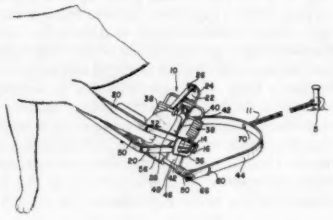
1. A fishing weight comprising:
a body having an axis, with a specific gravity greater than one, formed with an axial channel and connected radial slot therein;
a resilient substantially incompressible axial cavity containing insert having legs, said insert being captured within the axial channel and radial slot of the body; and
a substantially closed radial aperture defined by the legs of the insert, said aperture intersecting the entire length of the axial cavity of the insert, said legs being formed to provide a recess between each leg and a proximate wall of the radial slot for flexion of the legs.

4,279,093
HUMANE ANIMAL TRAP
Paul J. Iddings, Box 217, Big Horn, Wyo. 82833
Filed Oct. 24, 1979, Ser. No. 88,069
Int. Cl.³ A01M *23/30*
U.S. Cl. 43—81.5 **7 Claims**



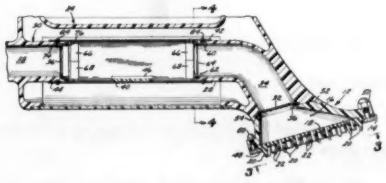
1. An animal trap including a base structure defining a first elongated base bar, a second elongated bar having one end pivotally anchored relative to one end of said base bar for angular displacement between a first "cocked" position disposed at generally right angles relative to said base bar and a second "closed" position closely adjacent and generally paralleling said base bar, a follower loosely engaged with said one ends of said bars and slidable therealong, spring means operatively connected between said base bar and said follower yieldingly biasing said follower along said base bar toward the other end thereof, said base structure including a pair of uprights projecting upwardly from opposite ends of said base bar and an upper member interconnecting the upper ends of said uprights, a safety latch ring slidably mounted on said upper member and from the latter downwardly along each of said uprights, said second bar being slidably received through said latch ring.

4,279,094
ANIMAL TRAP ATTACHMENT
John R. Beck, R.D. 2, Knox, Pa. 16232
Filed Mar. 4, 1980, Ser. No. 127,052
Int. Cl.³ A01M *23/26*
U.S. Cl. 43—96 **7 Claims**



1. An attachment to be connected between an animal trap and its anchoring chain for resiliently resisting the pull of an animal caught by the jaws of the trap comprising, in combination, a clamp to be secured to the frame of the trap; a pivot rod mounted on said clamp; a bail connected to the chain and being pivotally mounted on said rod against the frame; and spring means acting between said bail and the frame to resist pivotal movement therebetween.

4,279,095
FLEA VACUUM SYSTEM
Helen C. Aasen, P.O. Box 1561, Long Beach, Calif. 90801
Filed Jan. 2, 1980, Ser. No. 109,036
Int. Cl.³ A01M *1/06*
U.S. Cl. 43—139 **7 Claims**



1. A vacuum cleaner attachment for ridding house pets of fleas comprising:
a nozzle having a pointed suction head defining a plenum extending from a transverse partition to an inlet passageway, an array of firm, pliable fingers about the perimeter of said transverse partition and a plurality of flexible, annular tubes within said perimeter of said partition and in communication with said plenum,
a hollow collection canister having an integrally formed handle, an inlet neck connected to said nozzle at said inlet passageway, a displaceable access panel, and an exhaust pipe defining an exhaust passageway connectable to a vacuum cleaner hose,
a removable transverse, coarse filter positioned across said inlet passageway,
a transverse porous, fine filter positioned upstream of said exhaust passageway, and

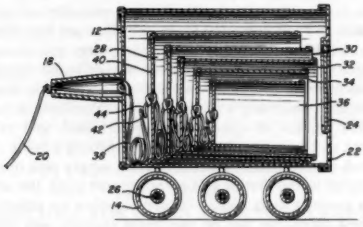
a removable, disposable tubular bag with sealable ends positioned within said canister between said inlet passageway and said exhaust passageway, and connected to said inlet neck at one end and said exhaust pipe at the other end.

4,279,096

PULL TOY

Debra K. Guidry, P.O. Box 1152, 115 St. Peters Ct., Donaldsonville, La. 70346

Filed Mar. 7, 1980, Ser. No. 128,096
Int. Cl.³ A63H *33/00, 33/06*
U.S. Cl. 46—11 **8 Claims**



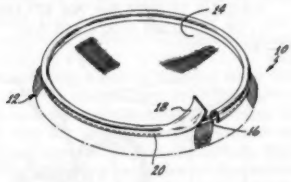
1. A pull toy comprising a plurality of cylindrical shaped components of different diameters, said components arranged in a linear fashion and being progressively smaller in diameter from the largest to the smallest, whereby a portion of each component except the largest is nested in the next larger cylindrical component, said pull toy further including means for flexibly connecting successive components and means to pull said toy, said largest cylindrical component having an open end, the other cylindrical components being fully nested in said largest cylindrical component, said toy including a lid to cover said open end and enclose said other cylindrical components in said largest component, said connecting means containing fastening means, said fastening means capable of being unfastened whereby each cylindrical component can be separated, said flexible connected components capable of moving out of said open end when said lid is removed and said toy is pulled by said pull means.

4,279,097

SOFT PLAYING DISC

Gary W. Walker, 3475 Chartered Oak Dr., Carlsbad, Calif. 92008

Filed Jun. 2, 1980, Ser. No. 155,495
Int. Cl.³ A63H *27/00;* B32B *3/02;* A42B *1/02*
U.S. Cl. 46—74 D **4 Claims**



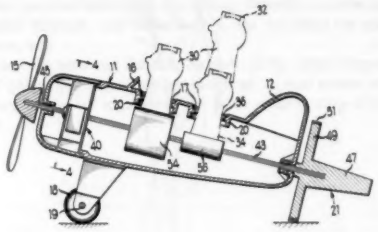
1. A disc shaped playing device comprising a circular section of a flexible sheet of carpeting material having a backing and a piling extending from one surface of the backing and having a strip of flexible carpet binding tape tensioned, extending and secured around the periphery of the sheet so that the edges thereof are crimped under for holding the sheet in a slightly cupped shape with a concave surface and a convex surface with the piling extending from the convex surface.

4,279,098

TOY AIRPLANE

Ralph J. Kulesza, Chicago, Ill.; James M. Alcock, Salt Lake City, Utah, and Burton C. Meyer, Downers Grove, Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Jan. 24, 1979, Ser. No. 6,036
Int. Cl.³ A63H *11/10*
U.S. Cl. 46—101 **7 Claims**



1. A toy airplane selectively capable of aerial barrel rolling and random taxi maneuvers comprising:

a fuselage;

a propeller rotatably mounted on the front of said fuselage;

a hand graspable handle rotatably mounted on the rear of said fuselage;

three wheels connected to said fuselage for supporting said fuselage on a surface, two of said wheels mounted on said fuselage side by side for rotation around an axis generally transverse to the length of said fuselage, said third wheel mounted on said fuselage spaced from said side by side wheels for rotation around an axis extending generally parallel to the length of said fuselage;

barrel rolling means for simultaneously rotating said propeller and said fuselage around an axis extending generally parallel to the length of said fuselage when said fuselage is supported by said handle;

random taxi means for simultaneously rotating said propeller around said axis extending along the length of said fuselage and said fuselage around an upstanding axis through said side by side wheels generally perpendicular to the length of said fuselage, when said fuselage is supported on a surface by said wheels;

drive means mounted within said fuselage and connected to said propeller for rotating the same; and

winding means for winding said drive means.

4,279,099

FIGURE TOY

Robert F. Dyer, Rancho Palos Verdes; J. Stephen Lewis, Pacific Palisades; Janice E. Rosenthal, Manhattan Beach; James P. Mills-Winkler, Torrance, and Robert F. Schroeder, Long Beach, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Dec. 10, 1979, Ser. No. 102,068
Int. Cl.³ A63H *13/00*
U.S. Cl. 46—119 **4 Claims**

1. In combination with a figure toy including an upper torso having a shoulder region, an arm having a spherical surface at its upper end and a shoulder joint on said arm for connecting said spherical surface to said shoulder region, the improvement which comprises:

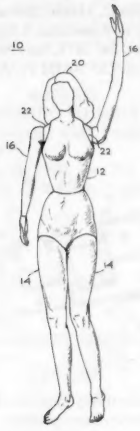
an opening provided in said shoulder region;

a shoulder assembly projecting through said opening and contoured to have the external appearance of at least a portion of a shoulder on said figure toy;

a pivot swingably connecting said shoulder assembly to said upper torso in said opening for movement in a manner simulating natural shoulder movement; and

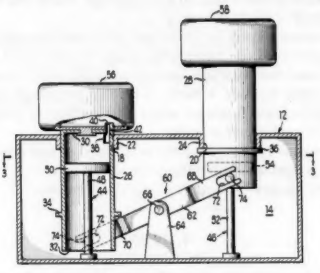
an aperture and an aligned cavity provided in said shoulder

assembly for rotatably receiving said shoulder joint and said spherical surface, respectively, said upper torso, arm



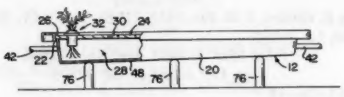
and shoulder assembly forming a substantial part of the external contour of said figure toy.

4,279,100
SOUNDING TOY
Denni F. Rivette, Chicago; Burton C. Meyer, Downers Grove, and Donald F. Nix, Hanover Park, all of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.
Filed Sep. 28, 1979, Ser. No. 79,944
Int. Cl.[3] A63H *5/00*; G10D *7/00*; A63H *33/00*
U.S. Cl. 46—179 **15 Claims**



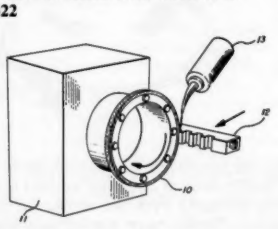
1. A variable pitch sounding toy comprising:
a housing;
a first variable volume chamber within said housing;
a second variable volume chamber within said housing;
an air actuated sounding mechanism in fluid communication with said first and second chambers;
an engageable element operatively connected to said first chamber to vary the volume of said first chamber forcing air into said second chamber through said sounding mechanism;
a movable member operatively connected to said element to vary the volume of said second chamber, and a cylinder connected to said first chamber and slidably mounted within said housing, said second chamber defined within the interior of said cylinder, said toy further including a piston slidably mounted within said cylinder and fixed to said housing defining said second chamber within said cylinder.

4,279,101
MODULAR HYDROPONIC SYSTEM
Frank W. Leroux, 5575 Williamsdale Ct., Seminole, Fla. 33541
Filed Aug. 30, 1979, Ser. No. 71,271
Int. Cl.[3] A01G *31/00*
U.S. Cl. 47—64 **5 Claims**



1. A hydroponic system comprising a plurality of plant support units in fluid communication and disposed end to end to form a continuous flow modular hydroponic system, each plant support unit including a nutrient tray of liquid nutrient impervious material to operatively house a nutrient therein, a support means comprising a support structure defining at least one support surface to operatively support each said plant support unit and a nutrient feed supply comprising a pump and storage tank to feed nutrient therefrom to a supply pipe operatively coupled to the first of said plant support units, the adjacent plant support units being coupled together by interconnecting feed pipes, the last of said plant support unit being coupled to said nutrient feed supply by a return feed pipe, each said plant support unit comprising a nutrient tray having a ledge formed about the upper inner peripheral portion thereof and a plant cartridge support member having a corresponding ledge formed about the periphery thereof configured to matingly engage said ledge of said nutrient tray to form a nutrient compartment within said tray, said plant cartridge support member including at least one cartridge aperture formed thereon to operatively support a corresponding plant cartridge, at least one cartridge operatively configured to support a plant therein, said plant medium cartridge comprising a cylindrical hollow member having a coupling member formed about the upper portion thereof to operatively couple said plant cartridge to said plant cartridge support member and a retainer means formed on the lower portion thereof to operatively retain a planting medium within said hollow member, said retainer means comprising at least one retainer member extending inwardly relative to the side wall and from above the bottom portion of said substantially cylindrical hollow member to operatively engage the lower portion of the planting medium.

4,279,102
METHOD OF MANUFACTURING NARROW TRACK FERRITE HEAD CORES
Douglas J. Hennenfent, Minneapolis; Robert A. Johnson, Minnetonka, and Allan L. Holmstrand, Bloomington, all of Minn., assignors to Magnetic Peripherals Inc., Minneapolis, Minn.
Filed Jul. 24, 1978, Ser. No. 927,325
Int. Cl.[3] B24B *1/00*; G11B *5/42*
U.S. Cl. 51—322 **3 Claims**



1. A method of forming the opposite sides of a projection of a magnetic transducing core formed of ferrite grains, said projection having a transducing surface at its end which a flux

gap intersects, said flux gap splitting the projection and intersecting said opposing sides, and said opposing sides comprising substantially surfaces formed by abrasively removing parts of individual ferrite grains, comprising the steps of:

(a) mounting on a precision spindle, a diamond dust grinding wheel having diamond grit no coarser than 2,000 size, and having a polymer matrix, said spindle-mounted grinding wheel having axial peripheral runout of less than about 0.0025 mm. per side and radial runout of less than about 0.0025 mm. when rotated at a peripheral speed of about 35 meters per second;

(b) rotating the wheel at a peripheral speed of at least about 35 meters per second;

(c) feeding a ferrite bar into the rotating wheel at a speed of about 5 cm. per minute or less along a path substantially parallel to the sides of the wheel; and

(d) applying a fluid coolant comprising water containing a wetting agent to the wheel adjacent the cutting interface, whereby friction and impact between the wheel and the bar are kept sufficiently low to allow abrading of individual ferrite grains with substantially no dislodging of individual ferrite grains adjacent the sides of the wheel during the ferrite bar feeding step.

4,279,103

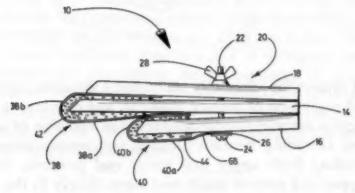
HAND TOOL FOR USE IN SANDING LOUVER BOARDS

Jesse Rodarte, 410 N. Eighth, Fowler, Calif. 93625

Continuation-in-part of Ser. No. 903,703, Dec. 11, 1978, abandoned. This application Dec. 7, 1979, Ser. No. 101,096

Int. Cl.³ B24D *15/04*

U.S. Cl. 51—389 **1 Claim**



1. A hand-tool of a block-like configuration having utility in the painting industry and adapted to be employed in simultaneously sand finishing commonly facing surfaces of a pair of louver boards comprising:

A. an elongated body including a pair of pad-supporting plates, each being of an elongated, planar shape, the plates of said pair being characterized by a common width and different lengths, and disposed in superimposed relation with adjacent ends of the plates at one end of the body being arranged in substantial co-planar alignment and the opposite ends thereof being provided with segmented working surfaces, each including a first side surface and an end surface, said working surface of said pair of plates being arranged in a mutually staggered relationship;

B. means defining a pair of sanding pads for said working surfaces including a pair of backing strips formed of a resilient backing material and adhesively affixed to said working surfaces in a substantially covering relationship with the first side surfaces, the end surfaces and second side surfaces opposite the first side surfaces thereof, and a pair of flexible sanding strips formed of a flexible material, each sand strip being characterized by a head and a tail segment, and an abrasive working surface extended between the segments suitable for use in sand finishing operations, said sanding strips being disposed in overlapped relationships with said backing strips, said head and tail segments being extended beyond each of the opposite ends of the backing strips;

C. means for securing to said body said sanding strips including a rigid cap plate disposed on one pad-supporting plate, in superimposed relation with an adjacent surface thereof, opposite to said working surface, for clamping therebetween the head segment of said one of the sanding strips, and tail segment engaging surfaces defined on adjacently disposed surfaces of the pad-supporting plates of said pair for clamping therebetween the tail segment of one and the head segment of the other of the sanding strips of said pair;

D. means for securing said plates against displacement relative to one another including a bore projected through the plates perpendicularly to the planes thereof, a screw extended through said bore, and a nut mounted on said screw; and

E. means for securing the tail segment of the other strip of said pair, including a washer mounted on said screw and seated on the tail segment of the other sanding strip of the pair.

4,279,104

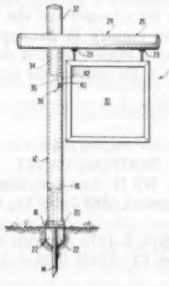
SIGN POST CONSTRUCTION HAVING RECIPROCABLE DRIVER FOR PLACEMENT AND REMOVAL

Alvin T. Classen, 1403 Roach St., Norfolk, Nebr. 68701

Filed Aug. 22, 1979, Ser. No. 68,783

Int. Cl.³ E02D *5/74;* **G09F** *7/18*

U.S. Cl. 52—38 **5 Claims**



1. A sign post construction, comprising:

(a) a central apertured ground abutment plate (**16**),

(b) an elongated anchor spike (**14**) extending through the ground abutment plate aperture and rigidly secured thereto at a position intermediate its length,

(c) an impact plate (**18**) rigidly and centrally secured to the top of the anchor spike,

(d) a hollow post tube (**12**) slidably disposed over the impact plate and anchor spike,

(e) a centrally apertured spiker plate (**20**) rigidly secured to and closing a lower end of the post tube, the anchor spike slidably extending through the striker plate aperture and the striker plate being disposed intermediate the ground abutment and impact plates such that the striker plate may be manually reciprocatingly driven downwardly, via the hollow post tube, against the ground abutment plate to drive the anchor spike into the ground, and upwardly against the impact plate to remove the anchor spike from the ground,

(f) the post tube and impact plate having complementary, non-circular cross-sections to prevent the post tube from rotating relative to the anchor spike, and

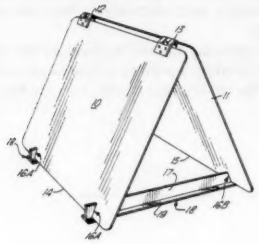
(g) sign carrying means removably mounted to the post tube.

4,279,105

GROUND-BASED PORTABLE AND COLLAPSIBLE STRUCTURES

John S. Cameron, 28 Cockels Loan, Renfrew, Scotland

Filed May 29, 1979, Ser. No. 43,372
Claims priority, application United Kingdom, Jun. 6, 1978, 26384/78
Int. Cl.[3] E04B *1/346;* E01F *13/00*
U.S. Cl. 52—71 7 Claims



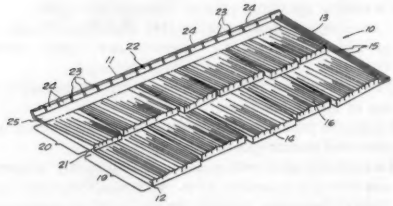
1. A ground-based portable and collapsible structure, e.g. a road sign, comprising two similar substantially rectangular plates hinged together and to be disposed in use in downwardly-diverging relationship with restricting means joining the two plates remote from the hinge axis to limit the angle to which the plates can open from one another, characterised in that the restricting means comprises a pair of bar means to be disposed in use on the ground in spaced and parallel relationship and affording respective pairs of upwardly-opening re-entrant slots which by alignment of the bar means may be brought into precise registry in two upwardly-converging planes intersecting at an angle of at least about 60° and at most about 75° and in which are engaged the hinge-remote edges of the plates.

4,279,106

ROOFING PANEL

Charles H. Gleason, 245 W. Lorraine, Glendale, Calif. 91206, and James O. Greenleaf, 6669 Juliet La., Canoga Park, Calif. 91307

Filed Nov. 5, 1979, Ser. No. 91,570
Int. Cl.[3] E04D *1/08, 1/34*
U.S. Cl. 52—100 3 Claims



1. A roofing panel for interfitting with other roofing panels to form a roofing surface, comprising:

a rigid molded shell having a decorative surface and an oppositely directed shallow cavity;

said shell having a top edge margined band extending across the full width of the shell and angularly directed upwardly and away from the decorative surface and a plurality of spaced thin-wall sections of the marginal band forming tabs of said band adapted to be selectively broken away and removed from the remainder of the band;

a side edge margin of the shell including continuous rib means facing in the same direction as the decorative surface; and

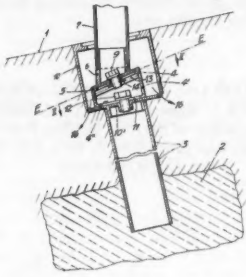
a rigid foam body received in the molded shell cavity including a slot extending along and spaced from the shell lower edge adapted for receiving the top edge marginal of another roofing panel therein, and a faced-off outwardly directed surface adapted for receipt onto the rib means of another roofing panel.

4,279,107

SYSTEMS FOR ANCHORING STRUCTURAL MEMBERS

Jean-Jacques Bollmann, Flühgasse 49, CH-8008 Zurich, Switzerland

Filed Aug. 3, 1979, Ser. No. 63,495
Claims priority, application Switzerland, Aug. 3, 1978, 8259/78
Int. Cl.[3] E02D *27/42*
U.S. Cl. 52—169.13 11 Claims



1. A system for adjustably anchoring a structural member in ground regardless of surface gradient, and comprising:

a section member fixedly positioned in a portion of an opening extending beneath ground, said section member including both upper and lower end portions, with the upper end portion positioned more closely to the ground surface than said lower end portion;

a separate retaining member also positioned within said opening and including a substantially sleeve-shaped upper end portion integrally attached to a substantially flange-shaped lower end portion, with the sleeve-shaped upper end portion engaging an end portion of a structural member extending into said opening;

inclined adjusting means for adjustably coupling said flange-shaped lower end portion of said retaining member to said section member to provide for selective positioning of the longitudinal axis of the structural member relative to the ground surface;

said inclined adjusting means comprising a one-piece bearing plate assembly rotatably and slidably mounted on the upper end portion of said section member, said bearing plate assembly including a first planar bearing surface confronting said retaining member, said first bearing surface being inclined an appreciable angle relative to an imaginary plane extending perpendicular to a longitudinal axis of said section member;

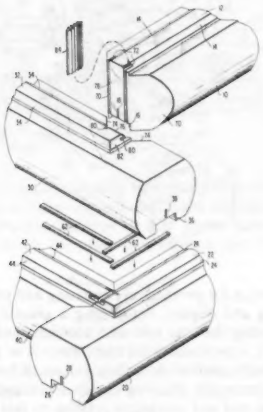
said inclined adjusting means further comprising said flange-shaped end portion of said retaining member including a second, planar bearing surface contacting said first bearing surface, said second bearing surface being inclined an appreciable angle relative to an imaginary plane extending perpendicular to a longitudinal axis of said sleeve-shaped portion of said retaining member;

whereby relative sliding and, or rotative movement of said first and second inclined bearing surfaces causes a corresponding re-orientation of the longitudinal axis of the structural member attached to the retaining member.

4,279,108
JOINT CONSTRUCTION FOR LOG BUILDINGS

Richard L. Collister, Jr, 1114 Margaret St., Missoula, Mont. 59801

Filed Jul. 25, 1979, Ser. No. 60,695
Int. Cl.[3] E04B 1/10
U.S. Cl. 52—233 7 Claims

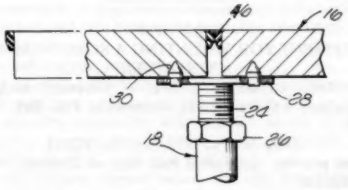


1. A log building construction comprising a plurality of courses of logs, each log of solid wood having a tongue on the upper surface and a rectilinear groove in the bottom surface interfitted with the groove and tongue respectively of adjacent logs, said tongue having beveled side edges to define with the corners of said rectilinear groove a pair of elongaged expansion chambers for preventing the propagation of drafts, a check groove in the bottom of said rectilinear groove and compressible gasket means on the upper surface of each tongue on opposite sides of said check groove engaging the bottom surface of the rectilinear groove.

4,279,109
ACCESS FLOOR MOUNTING ASSEMBLY

Joseph Madl, Jr., 2161 Vista Entrata, Newport Beach, Calif. 92660

Continuation-in-part of Ser. No. 796,161, May 12, 1977, abandoned. This application May 25, 1979, Ser. No. 42,546
Int. Cl.[3] E04F 15/024
U.S. Cl. 52—263 10 Claims

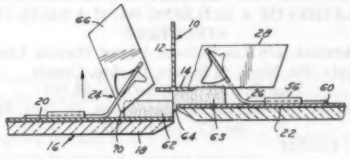


1. A removable panel system, comprising:
a plurality of panels;
a plurality of pedestals, each terminating in a panel support plate;
first means, precisely positioned on the top of each of said plates;
a second means disposed on the underside of each of said panels, adjacent the edges thereof, for cooperating in a precision fit engagement with said first means; and
one of said first and second means being a precisely located aperture and the other being a pin which has a tapered end portion to initially index and guide the panel and a vertical walled base portion which fits precisely and snugly in said aperture to precisely align said pedestals and said panels carried thereby over a permanent surface;
said vertical walled base portion of the pin abutting the interior wall of said aperture to resist lateral loads on said panel, said pins being spaced and dimensioned relative to the dimensions of said panels that substantially all lateral loads are transmitted through said first and second means rather than from the edge of one panel to another and so that said panels, and said plates form a structural diaphragm which resists lateral movement of said panels when said panels are subjected to a lateral load.

4,279,110
CEILING MIRROR ASSEMBLY

Paul H. Palazzolo, 21154 Hale, Mount Clemens, Mich. 48043, and Joseph J. Dinardo, 2869 Ellsworth, Richmond, Mich. 48062

Filed Mar. 19, 1979, Ser. No. 22,065
Int. Cl.[3] E04B 5/57
U.S. Cl. 52—302 12 Claims



1. A suspended ceiling mirror assembly to be positioned on a substantially horizontal support surface comprising in combination:
a panel having a mirrored portion adhered to a subpanel portion;
a hanger joined to the subpanel;
a locking member pivotably joined to the hanger, the locking member having a first stable position overlying the support surface for suspending the panel on the support surface but rotatable on the hanger upward in a substantially vertical plane so to allow for disengagement with the support surface; and
said hanger and locking member hidden from view when the panel is suspended on the support surface.

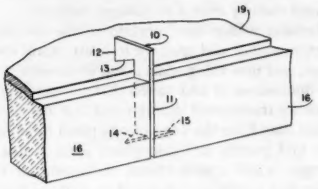
4,279,111
RETAINING CLIP FOR SOFFIT FIXING ON STEEL BEAMS OR COLUMNS

Dennis J. Hacker, Albuquerque, N. Mex., assignor to High Efficiency Insulation Technologies, Inc., Albuquerque, N. Mex.

Continuation-in-part of Ser. No. 823,217, Aug. 10, 1977, abandoned. This application Jul. 30, 1979, Ser. No. 62,246
Int. Cl.[3] E04B 1/38
U.S. Cl. 52—714 1 Claim

1. A device for supporting an insulation panel having an adhesive surface on one side thereof to the under side of a structural member comprising a clip having a main body with an angularly related tapered portion formed on one end thereof for engagement with the web of a structural member, said tapered portion lying in the same plane as the said body and tapering toward said body, a pair of tapered tail portions at the opposite end of said main body adapted to be oppositely bent

to a 90° angle with respect to said body to which the ends of an insulating panel may be impaled and retained thereon thus



allowing the said adhesive to harden and to retain the said panel to the said undersurface of said structural member.

4,279,112

METHOD FOR IMPROVING THE THERMIC INSULATION OF A BUILDING WITH A RIGID FRAME STRUCTURE

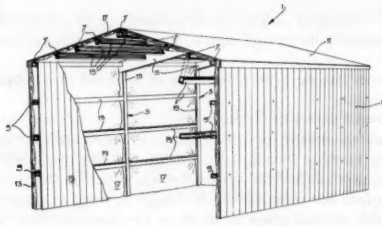
Yves Bertrand, c/o Les Batisses d'Acier Hercule Ltee., Rte. Kennedy, Ste. Marie de Beauce, Quebec, Canada

Filed Oct. 25, 1979, Ser. No. 88,180

Claims priority, application Canada, Jan. 19, 1979, 319985

Int. Cl.[3] **E04B** *1/00*

U.S. Cl. 52—741 **7 Claims**



1. The improved method for thermally insulating a building having a rigid metallic frame comprised of columns, beams, braces and rafters rigidly fixed to each other and designed to support sheet metal roof and wall panels which are bolted or similarly secured thereto, said method comprising the steps of:

placing a thick layer of insulating material onto the inner surfaces of the roof and wall panels before they are secured to the metallic frame, and then securing said panels to said frame, said layer of insulating material being compressed and pinched between the roof and wall panels and the parts of said rigid metallic frame to which they are fastened; and

subsequently completing the insulating of said building by gluing rigid coverings made of insulating material onto every column, beam, brace and rafter of said rigid frame, said rigid coverings being previously cut and shaped so as to completely cover the visible portions of said rigid frame appearing within said building under the layer of insulating material pinched between said frame and said roof and wall panels when the building is assembled, and said rigid coverings being in engagement with and being glued to said layer of insulating material whereby an essentially integral insulating layer is provided within the building.

4,279,113

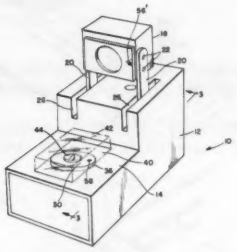
COIN GUARD FOR COIN PROTECTION

Immanuel Halm, 865 E. Decker Dr., Seven Hills, Ohio 44131

Filed Nov. 16, 1979, Ser. No. 94,844

Int. Cl.[3] **B65B** *51/10, 51/12*

U.S. Cl. 53—219 **2 Claims**



1. In a device for protectively encasing and packaging coins for handling and display, comprising a generally rectangular hollow housing having one end elevated and being offset downwardly, intermediate the ends, thereof to provide a generally flat horizontal work surface below said elevated end, a generally rectangular forming member pivotally mounted to said elevated end and elevatable relative to said work surface, generally circular resilient pad means arranged on said forming member, insulation means flatly arranged on said work surface and having a generally centrally disposed coin receiving area, a plurality of heating coils arranged in said insulation means and spacedly encircling said coin receiving area, said device adapted to support a first thermoplastic sheet flatly disposed on said insulation means, a coin generally centrally flatly arranged on said first sheet, and a second thermoplastic sheet superposed on said coin and generally coinciding with said first sheet, whereby when said forming member is pivotally lowered relative to said work surface said pad means will engage and compress said second and first sheets and the coin therebetween against said insulation means and a heating coil thereof, a main switch means connected to a power source, and selector switch means for selectively energizing said coils, transformer means in said housing having primary and secondary windings, means coupling said secondary winding to said selector switch means, and means connecting said primary winding to said main switch for energizing a preselected one of said heating coils to encirclingly thermally bond said sheets together and encase said coin therebetween in a package conforming to the size of coin.

4,279,114

EQUIPMENT FOR MOUNTING A SCREW-CAP ON A CONTAINER

Günter Bode, Ohrum, Fed. Rep. of Germany, assignor to Schmalbach Lubeca GmbH, Brunswick, Fed. Rep. of Germany

Filed Nov. 9, 1979, Ser. No. 92,811

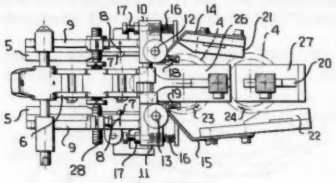
Claims priority, application Fed. Rep. of Germany, Nov. 15, 1978, 7833887

Int. Cl.[3] **B67B** *3/20;* **B65B** *7/28*

U.S. Cl. 53—314 **6 Claims**

1. A device for applying a screw cap on a container; said device comprising a horizontal conveyor for containers, a chute for delivering caps to a cap transfer point, said chute being inclined toward said horizontal conveyor, a guide shoe arranged in the area of said cap transfer point above said chute, resilient holding elements arranged upstream of said cap transfer point for holding a cap by its skirt in an inclined position to the path of travel of a container until the cap is picked up by the container, levers having friction surfaces for gripping a cap by its skirt for turning the cap, and at least two resilient cap

hold-down plates arranged downstream of said guide shoe; the improvement residing in said levers being independent of said resilient holding elements said levers having pivots aligned transversely of said conveyor, and said levers being of such different lengths that their friction surfaces grip a cap by its



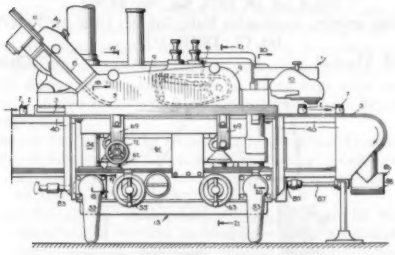
skirt sequentially and separately for turning caps first opposite to the direction of screw-on and then in the direction of screw-on, and said friction surfaces of said levers each extending alongside and below the plane of a separate one of said hold-down plates.

4,279,115

HIGH SPEED STRAIGHT LINE CONTAINER SEALING MACHINE

Cecil P. Roberts, Carroll, and Charles S. Ochs, Lancaster, both of Ohio, assignors to Anchor Hocking Corporation, Lancaster, Ohio

Filed Mar. 12, 1979, Ser. No. 20,011
Int. Cl.³ B65B *7/28;* B67B *3/20*
U.S. Cl. 53—314 **8 Claims**



1. In a straight line sealing machine having a container conveyor of fixed height with a cap applicator and a sealing head mounted on a sealing chamber positioned above said conveyor and container gripping side belts positioned on opposite sides of said conveyor, an improved mounting means for said sealing chamber and said side belts comprising the combination of:

a machine base;

a side belt support assembly;

a first column support means movably mounted on said base and mounting said sealing chamber at its top;

first adjusting means for adjusting the height of the first column support means for changing the height of said sealing chamber relative to said base;

a second column support means movably mounted on said base and mounting said side belt support assembly;

second adjusting means for adjusting the height of the second column support means for changing the height of said side belt support assembly relative to said base and independently of said first adjusting means;

third adjusting means on said side belt support assembly for adjusting the side belt spacing;

a drive shaft in said base;

first coupling means connecting said drive shaft to said sealing chamber independently of the sealing chamber height; and

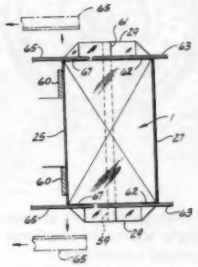
second coupling means connecting said drive shaft to said side belt support assembly independently of the side belt assembly height.

4,279,116

METHOD OF AND APPARATUS FOR WRAPPING

Robert C. James; Dennis P. Horsman, and Richard D. Sorenson, all of Sheboygan, Wis., assignors to Hayssen Manufacturing Company, Sheboygan, Wis.

Filed May 4, 1979, Ser. No. 36,175
Int. Cl.³ B65B *11/22*
U.S. Cl. 53—466 **15 Claims**



7. The method of wrapping a unit such as a ream of paper to be wrapped, the unit have a rectangular top and bottom, rectangular sids and rectangular ends, comprising:

supporting the unit at its bottom on elevator means with the elevator means in a lowered position;

positioning a wrapper for the unit above the unit, the wrapper comprising a sheet of material larger than the top of the unit and having rearward and forward portions extending beyond the planes of the rearward and forward sides of the unit a sufficient distance for being folded down upon the rearward and forward sides of the unit and under the bottom of the unit and end portions extending beyond the ends of the unit;

raising the elevator means from said lowered position to a raised position to lift the unit to a raised position and, as the unit is raised, causing the rearward and forward portions of the wrapper to fold down on the rearward and forward sides of the unit;

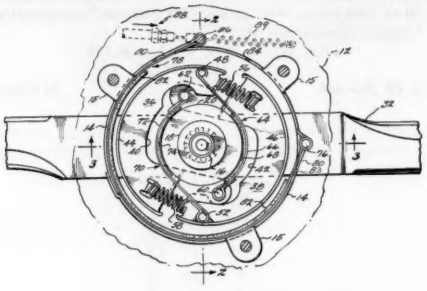
folding said rearward and forward portions of the wrapper in under the bottom of the unit;

moving the unit with the wrapper wrapped therearound forward; and, as the unit is moved forward with the wrapper wrapped therearound, folding forward sections of said end portions back on the ends of the unit by engagement with a pair of fixed end folders, and folding rearward sections of said end portions forward on the ends of the unit by moving a pair of rearward end folders forward, independently of the forward movement of the unit, from a retracted position with said rearward end folders in a position for folding said rearward sections on the ends of the unit, then returning said rearward end folders to their retracted position while the next unit to be wrapped is being raised by moving said rearward end folders away from the ends of the unit in a first direction substantially perpendicular to the ends of the unit to a clearance position for the raising of the next unit during their return, and moving said rearward end folders rearwardly and then in a second direction substantially opposite to said first direction to their retracted and folding position for operation on the wrapper of the next unit when it has been lifted to the raised position.

4,279,117
COMBINED CLUTCH AND BRAKE ARRANGEMENT FOR A ROTARY LAWNMOWER BLADE

Randall K. Lawrence, Fairview, and Aaron A. Stevens, Spring Hill, both of Tenn., assignors to The Murray Ohio Manufacturing Co., Brentwood, Tenn.

Filed Jan. 30, 1980, Ser. No. 116,970
Int. Cl.³ A01D *69/10*
U.S. Cl. 56—11.3 **6 Claims**



1. A combined clutch and brake arrangement for a rotary lawnmower having a source of rotational movement and a blade, said arrangement comprising:

a drive disk joined to said source for rotation therewith;

support means for said blade;

at least one centrifugally movable shoe pivotally connected to said support means;

a flexible drive band positioned adjacent to said drive disk, said band being connected at one of its ends to said shoe at a location spaced from the pivotal connection of the shoe to said support means, the other end of said band being connected to said support means at said pivotal connection whereby said drive band surrounds a portion of said drive disk;

spring means urging said shoe about its pivotal connection to bring said drive band into frictional engagement with the periphery of the drive disk enabling translation of the rotation of the disk to said shoe, the support means and said blade, the rotation of said shoe producing centrifugal movement thereof about its pivotal connection to increase the frictional engagement of the drive band with the drive disk;

a brake band positioned adjacent said shoe; and

means for selectively moving said brake band into engagement with the shoe to decelerate said shoe, the support means and said blade and to displace the shoe about its pivotal connection in opposition to said centrifugal movement and the urging of the spring means to interrupt the frictional engagement of the drive band with the periphery of the drive disk.

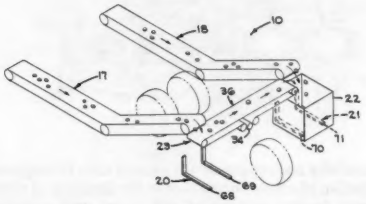
4,279,118
FRUIT HARVESTING MACHINE WITH BIN FILLING SYSTEM

Martin H. Col, and Ronald L. Peters, both of Modesto, Calif., assignors to FMC Corporation, San Jose, Calif.

Filed Jan. 11, 1980, Ser. No. 111,509
Int. Cl.³ A01G *19/06*
U.S. Cl. 56—329 **10 Claims**

1. In a fruit harvester of a type wherein fruit is shaken from a tree and directed into receptacles, including a main frame movable along a path, means for movably engaging a fruit tree and shaking the tree while so engaged, a collection surface adapted to collect the fruit as it falls from the tree, two parallel conveyors disposed on either side of the main frame and arranged to receive the fruit from said collection surface, said conveyors being adapted to transport the fruit to points behind the collection surface and terminating at locations on opposite sides of the main frame, the improvement comprising:

means for supporting two receptacles so that a first receptacle will be located beneath the termination point of one conveyor and a second receptacle will be located beneath the termination point of the other conveyor, and

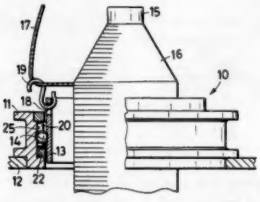


means for selectively intercepting fruit from either of the two parallel conveyors, but not from both of the parallel conveyors simultaneously, and transporting that fruit so that it is deposited in the receptable associated with the opposite conveyor.

4,279,119
ROTARY RING FOR SPINNING AND TWISTING FRAME

Angelo Marzoli, Palazzolo Sull'Oglio, Italy, assignor to F. lli Marzoli & C. S.p.A., Italy

Filed Jul. 19, 1979, Ser. No. 58,993
Claims priority, application Italy, Jul. 25, 1978, 26077 A/78
Int. Cl.³ D01H *7/56*
U.S. Cl. 57—124 **7 Claims**



1. A rotary ring for spinning and twisting frames with spindles receiving thread thereon, comprising

ring tails on the spinning and twisting frames,

an annular stator fastened to each of said ring rails,

an annular rotor rotatably mounted coaxially within said stator and with the spindle,

revolving members mounted between said rotor and said stator,

a hook fitted on said rotor for passing the thread therethrough when being processed, the thread driving said hook to rotation,

and braking means inserted between said stator and said rotor,

characterized in that said rotor is driven in rotary movement, placing said revolving members in rotation by contact therewith, said braking means consequently rotating with said revolving members by contact therewith, said braking means rotating about said rotor and under the action of the centrifugal forces thus acting thereon, frictionally engaging the internal walls of said stator thus slightly delaying the speed of said rotor relative to the spin of the spindle.

4,279,120

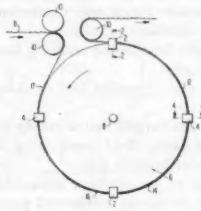
SELF TWIST YARN AND METHOD AND APPARATUS FOR MAKING SUCH YARNS

Alan H. Norris, Rome, Ga., assignor to WWG Industries, Inc., Rome, Ga.

Continuation-in-part of Ser. No. 913,674, Jun. 8, 1978, abandoned, and a continuation of Ser. No. 916,567, Jun. 19, 1978, abandoned. This application Dec. 17, 1979, Ser. No. 104,211

Int. Cl.[3] D02G 3/26, 3/28; D01H 7/90, 7/92

U.S. Cl. 57—204 60 Claims



1. A method of twisting a textile strand to provide longitudinally spaced zones which are twisted in opposite directions, comprising the steps of

moving the strand in a longitudinal direction,

moving a first strand twisting device concurrently with the strand and operatively engaging a first location on the strand with said first strand twisting device,

rotating the strand with said first strand twisting device to provide the strand with opposite twists on opposite sides of the first location, bringing the twisted strand into parallel adjacent relationship with a second strand, and

releasing the twisted strand to permit it to untwist at least partially and to twist itself to said second strand.

36. Apparatus for twisting a textile strand to provide longitudinally spaced zones which are twisted in opposite directions, comprising

means for moving the strand in a longitudinal direction,

means for moving a first strand twisting device concurrently with the strand and into operative engagement with a first location on the strand,

said first strand twisting device including means for rotating the strand at the first location to provide the strand with opposite twists on opposite sides of the first location,

means for bringing the twisted strand into parallel adjacent relationship with a second strand and releasing the twisted strand to permit it to untwist at least partially to twist itself to said second strand.

4,279,121

STRANDED NICKEL BRAZE ALLOY PREFORMS

Edward J. Ryan, Wallingford; David A. Rutz, Manchester, both of Conn., and Jack W. Lee, Palm Beach Gardens, Fla., assignors to United Technologies Corporation, Hartford, Conn.

Continuation of Ser. No. 895,161, Jan. 10, 1978, abandoned. This application Oct. 3, 1979, Ser. No. 81,515

Int. Cl.[3] D02G 1/00; B32B 15/02, 15/04

U.S. Cl. 57—258 4 Claims

1. A nickel alloy braze preform which comprises a plurality of fine wire strands, which are mechanically held in proximity to each other by twisting or braiding the strands together to form a stranded preform, each of said strands having a boride surface layer, the total cross-sectional area of the strands being in excess of about 0.0015 square inch and the ratio of surface area to volume of the plurality of strands being in excess of about 100 in^{-1}, said stranded preform being used in place of a single borided wire (which would have a particular cross-sectional area and boride surface layer thickness) said plurality of strands having a cross-sectional area essentially equal to the cross-sectional area of said single wire, while having an increased surface area relative to that of the single wire, so that the depth of the borided layer may be reduced, while maintaining the total boron level equal to or in excess of the single boride wire, so that stranded preform has the ability to withstand bending strands without significant spallation of the borided surface layer.

4,279,122

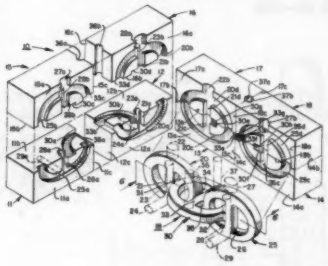
METHOD OF MAKING CHAIN

James B. Rogers, Lakeland, Fla., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Sep. 19, 1979, Ser. No. 77,081

Int. Cl.[3] B21L 5/02

U.S. Cl. 59—10 16 Claims



1. A method of making a chain comprising casting at least two links integrally so that the two links interlock and are joined together, and then severing said links along said joint to provide at least two separate, interlocked links.

4,279,123

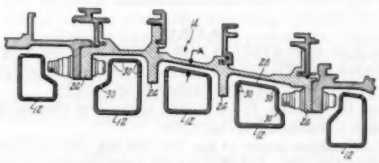
EXTERNAL GAS TURBINE ENGINE COOLING FOR CLEARANCE CONTROL

James G. Griffin, West Hartford, and Frederick M. Schwarz, Glastonbury, both of Conn., assignors to United Technologies Corporation, Hatford, Conn.

Filed Dec. 20, 1978, Ser. No. 971,288

Int. Cl.[3] F02C 7/18

U.S. Cl. 60—226 R 4 Claims



1. A turbofan engine operating over a range of power having a fan discharge duct, and having rotating machinery and a casing surrounding said rotating machinery, and where there are seal means extending inwardly from said casing, means for controlling the clearance between the tip of the rotating machinery and the seal means, said casing having a plurality of axially spaced flanges extending outwardly therefrom, at least one tube circumferentially mounted about said engine case adjacent to at least one of said flanges having a wall adjacent to said casing that is substantially coextensive with the expance between adjacent flanges and conforming to the shape of the casing, connection means interconnecting the fan discharge duct and said tube whereby the cool fan discharge air is directed through apertures formed in said tube to impinge on the side wall of said flange and said flange being sufficiently structured so that the effect of cooling causes the engine case to

shrink to reduce the diameter of the seal means and the clearance between the said tip and said seal means, means for selectively turning the flow of air on and off at a given power condition of said range of power, and said wall of said tube being spaced from said casing and spanning substantially the distance between adjacent flanges defining a cavity for supporting a film of air supplied by the impinged air.

4,279,124

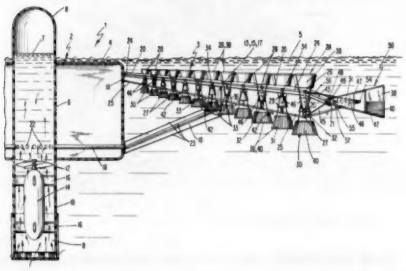
SYSTEM FOR EXTRACTING SUBSURFACE WAVE ENERGY

Edward J. Schremp, 226 S. Fairfax St., Alexandria, Va. 22314

Continuation-in-part of Ser. No. 858,087, Dec. 6, 1977, abandoned. This application Jan. 10, 1979, Ser. No. 5,661

Int. Cl.³ F03B *13/12*

U.S. Cl. 60—505 **69 Claims**



1. An apparatus for extracting wave energy from a large body of water, comprising:

impeller means positioned below the surface of the water and responsive to wave induced subsurface water movement;

said impeller means comprising pluralities of wave responsive impellers distributed in a series of generally concentric rings so as to form a three-dimensionally ordered generally annular array of impellers effectively surrounding and thereby sheltering a given bounded central region at and below the surface of the water; and

means coupled to said impeller means for performing useful work.

4,279,125

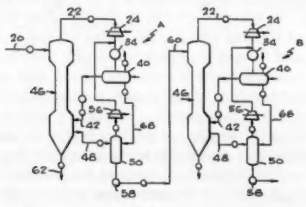
PROCESS AND SYSTEM FOR RECOVERY OF ENERGY FROM GEOTHERMAL BRINES AND OTHER HOT WATER CONTAINING SOURCES

Samuel G. Woinsky, Irvine, Calif., assignor to Occidental Research Corporation, Irvine, Calif.

Continuation-in-part of Ser. No. 589,068, Jun. 23, 1975, abandoned, Ser. No. 763,533, Jan. 28, 1977, abandoned, and Ser. No. 836,293, Sep. 26, 1977, Pat. No. 4,213,302. This application Feb. 1, 1979, Ser. No. 8,793

Int. Cl.³ F03G *7/00;* **F01K** *23/02*

U.S. Cl. 60—641F **4 Claims**



1. Process for recovery of energy from hot water-containing fluids containing uncondensible gas, said hot water-containing fluids including geothermal brines and other hot water sources, which comprises

(a) flashing said hot water-containing fluid to flash off a mixture of steam and uncondensible gas and substantially reduce the amount of uncondensible gas in said hot water-containing fluid,

(b) work expanding said mixture to recover energy,

(c) introducing said flashed hot water-containing fluid into a first heat transfer zone and directly contacting said flashed hot water-containing fluid therein, with a first working fluid in liquid form, to provide a first heated working fluid comprising water vapor and uncondensible gas, and a cooled water-containing fluid,

(d) expanding said first heated working fluid in an expander to produce work,

(e) discharging said expanded first working fluid from said expander,

(f) cooling said discharged first working fluid, to provide a condensed working fluid comprising condensed water vapor and uncondensible gas,

(g) separating in an accumulator zone said condensed first working fluid from said condensed water vapor and uncondensible gas,

(h) returning said separated first working fluid under pressure to said heat transfer zone for reheating therein,

(i) venting said uncondensible gas from said accumulator zone,

(j) withdrawing said cooled water-containing fluid at a moderately elevated temperature from said heat transfer zone,

(k) introducing said withdrawn water-containing fluid into a second heat transfer zone and directly contacting said withdrawn water-containing fluid therein, with a second working fluid in liquid form, to provide a second heated working fluid, comprising water vapor and an uncondensible gas,

(l) withdrawing said second heated working fluid from said second heat transfer zone,

(m) expanding said withdrawn second working fluid to produce work,

(n) cooling said expanded second working fluid, to produce a condensed second working fluid comprising condensed water vapor and uncondensible gas,

(o) separating said condensed second working fluid from condensed water and any uncondensible gas, and

(p) returning said separated second working fluid under pressure to said second heat transfer zone, said flashing of said hot water-containing fluid being controlled to substantially reduce the concentration of uncondensible gas in the hot water-containing fluid prior to its introduction into said first heat transfer zone and thereby decreasing the amount of working fluid vented from the accumulator, along with said vented gas, and wherein said first working fluid comprises a single organic fluid selected from the group consisting of aromatics, paraffins, naphthenes, olefins and ethers, and said second working fluid comprises a mixture of said organic fluids.

4,279,126

METHOD OF UTILIZING RESIDUAL HEAT IN THE PRODUCTION OF CELLULOSE AND AN INSTALLATION FOR CARRYING OUT THE METHOD

Gösta Rosenblad, Gothenburg, Sweden, assignor to Generator Industri AB, Sweden

Filed Dec. 13, 1978, Ser. No. 969,060

Claims priority, application Sweden, Dec. 21, 1977, 7714563

Int. Cl.³ F01K *25/14*

U.S. Cl. 60—651 **14 Claims**

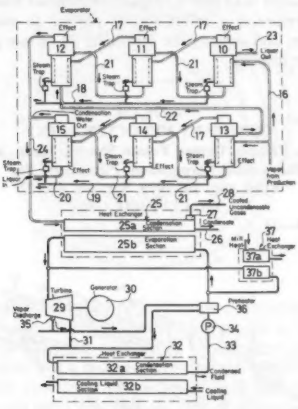
1. A method of utilizing residual heat in a pulp mill of a paper making process and where spent cooling liquor is evaporated in a multiple-effect evaporator using vapor evaporated from the liquor as a heating medium, comprising the steps of:

(a) providing, from at least one last effect of the multiple-

effect evaporator, outlet vapor holding a saturation pressure in a range immediately below atmospheric pressure;

(b) condensing said outlet vapor in one side of a heat exchanger;

(c) supplying, for evaporation in the other side of the heat exchanger, a working fluid having in vaporous form, a volume substantially lower than that of the outlet vapor from the evaporator for the amount of heat extracted from the outlet vapor in the exchanger and at a temperature sufficiently lower than that of the outlet vapor in the heat exchanger so as to cause heat transfer;



(d) expanding, in a turbine, the vapor of the evaporated working fluid for producing mechanical work by a steam power process;

(e) condensing the vapor of the evaporated working fluid in a condenser;

(f) pumping the condensed working fluid to a higher pressure; and

(g) returning the condensed working fluid to the heat exchanger for further evaporation.

4,279,127

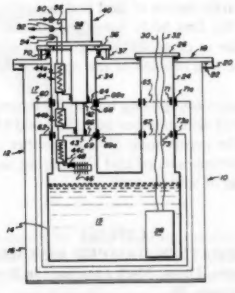
REMOVABLE REFRIGERATOR FOR MAINTAINING LIQUEFIED GAS INVENTORY

Ralph C. Longsworth, Allentown, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Division of Ser. No. 17,009, Mar. 2, 1979. This application Mar. 3, 1980, Ser. No. 126,759

Int. Cl.³ F25B *45/00*

U.S. Cl. 62—77 **5 Claims**



1. A method for removing a refrigeration source from an apparatus containing a regulated atmosphere wherein the refrigeration source is removable through a normally closed access means without exposing the contained atmosphere to ambient conditions outside of said apparatus comprising:

fitting a gas tight receptacle to said access means;

establishing an atmosphere within said receptacle;

withdrawing said refrigeration source into said gas tight receptacle;

closing said gas tight receptacle between said apparatus and said refrigeration source; and

removing said refrigeration source from said gas tight receptacle.

4,279,128

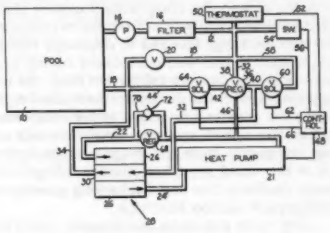
HEAT PUMP SWIMMING POOL HEATER

David J. Leniger, Vancouver, Wash., assignor to Alfred R. Edwards and Gene R. Price, both of Vancouver, Wash.

Filed Apr. 30, 1979, Ser. No. 34,273

Int. Cl.³ F25B *27/02, 13/00*

U.S. Cl. 62—238.6 **8 Claims**



1. A heating system for a swimming pool in which water from the pool is circulated by a pump from the pool through a pool outlet line and back into the pool through a pool return line, said system comprising:

(a) a three-way regulator valve having an inflow port which is connected to the pool outlet line, having a first outflow port which is connected to the pool return line and a second outflow port, said valve being operable in a manner such that the amount of fluid entering said inflow port can be selectively divided between said first and second outflow ports;

(b) heat pump means transferring heat to a heat transfer fluid which is circulated through said heat pump means in a closed loop;

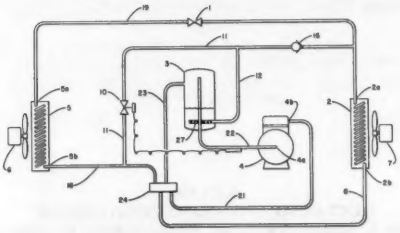
(c) a heat exchanger having a primary coil which is interconnected to said heat pump in a manner for circulation of said heat transfer fluid through said primary coil and a secondary coil which is interconnected between said second outflow port of said regulator valve and the return line for circulating the pool water through said secondary coil;

(d) control means associated with said regulator valve for selectively controlling the relative amounts of pool water from said inflow port which are directed to said first and second outflow ports respectively, said control means being sensitive to the pressure of said heat transfer fluid between said heat pump and said primary coil so that an increasingly greater portion of the pool water leaves said regulator valve through said first outflow port when said pressure decreases, and an increasingly greater portion of the pool water leaves said regulator valve through said second outflow port when said pressure increases.

4,279,129
HOT GAS DEFROST SYSTEM

Peter L. Cann, Canastota, and Paul S. Sacks, Cazenovia, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Division of Ser. No. 947,980, Oct. 2, 1978, Pat. No. 4,215,555.
This application Dec. 12, 1979, Ser. No. 103,833
Int. Cl.[3] F25B 47/00
U.S. Cl. 62—278 4 Claims

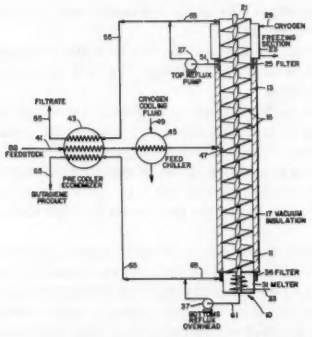


1. A component of a refrigeration system which acts as a combination accumulator and re-evaporator, said refrigeration system including a compressor, condenser and evaporator whereon frost may be formed during refrigeration system operation, the component comprising a unitary shell which is connected to receive refrigerant from the evaporator and from a compressor discharge line and to discharge refrigerant to a compressor suction line, said component during heat transfer operation receiving gaseous refrigerant from the evaporator, no refrigerant flow from the compressor discharge line and discharging the gaseous refrigerant to the compressor suction line; and in the defrost mode of operation said component receiving refrigerant from the evaporator at least a part of which is in the liquid state, hot gaseous refrigerant from the compressor discharge line and discharging gaseous refrigerant to the compressor suction line.

4,279,130
RECOVERY OF 1,3-BUTADIENE BY FRACTIONAL CRYSTALLIZATION FROM FOUR-CARBON MIXTURES

Ray N. Finch, and William D. Nash, both of Odessa, Tex., assignors to El Paso Products Company, Odessa, Tex.

Filed May 22, 1979, Ser. No. 41,308
Int. Cl.[3] B01D 9/04
U.S. Cl. 62—544 17 Claims



1. A continuous fractional crystallization process for recovering 1,3-butadiene product as a first C_4 component product and for isolating a filtrate product from a C_4-hydrocarbon mixture, comprising:

A. precooling said C_4-hydrocarbon mixture to a temperature at which crystallization is initiated by at least partial heat exchange with said 1,3-butadiene product and by heat exchange with a cryogen;

B. feeding said precooled mixture to a continuous crystallization column having a freezing section at one end and a melting section at the other end;

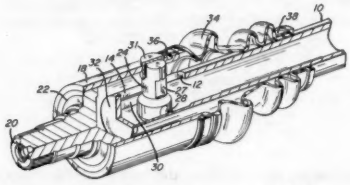
C. withdrawing 1,3-butadiene from said other end, returning a reflux portion thereof to said melting section, and sending the remainder as said 1,3-butadiene product to product disposal; and

D. withdrawing a spent filtrate, comprising C_4-hydrocarbons other than said 1,3-butadiene product from said one end, returning a reflux filtrate portion to said freezing section, and sending the remainder as filtrate product to filtrate disposal.

4,279,131
CONSTANT VELOCITY JOINT

William L. Pringle, Grosse Pointe Shores, Mich., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Aug. 20, 1979, Ser. No. 68,122
Int. Cl.[3] F16D 3/30
U.S. Cl. 64—21 3 Claims



1. A constant velocity universal joint, comprising:

first and second rotatable bodies, at least one of said bodies being angularly and axially displaceable with respect to the other, the first of said bodies having an axial elongated slot extending transversely through said body adjacent one end thereof, said second body having an internal hollow cavity loosely housing the slotted portion of said first body,

an elongated torque transmitting member extending longitudinally in the transverse direction of said first body in said slot and engaging opposite sidewalls thereof for transmitting rotary motion between said bodies,

rotary mounting means fixedly mounted in said second body and journaling opposite ends of said member,

said member being connected to said second body at right angles to the axis of rotation thereof and being slidable and pivotable within said slot in the first body in the direction of the length thereof so as to permit substantial angular and axial articulation of said bodies,

said slot in the first body having a channel approximately semicircular in cross section extending along the longitudinal centerline of each of the opposite sidewalls thereof, and

centering means comprising ball-shape means on each of the long sides of said member engaging said channels so as to maintain the centerpoint of said member coincident with the longitudinal axis of said slot during angular and axial movements of said bodies.

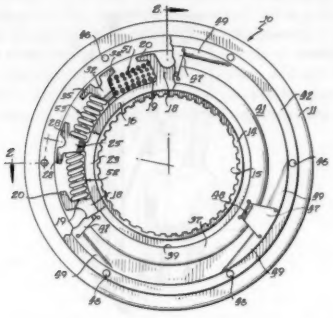
4,279,132
VIBRATION DAMPER ASSEMBLY

Paul E. Lamarche, Utica, Mich., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Oct. 16, 1978, Ser. No. 951,823
Int. Cl.[3] F16D 3/14, 47/02
U.S. Cl. 64—27 C 13 Claims

1. A vibration damper assembly to transmit torque between

driving and driven members, comprising an input member operatively connected to torque input means, a hub operatively connected to torque output means and having three circumferentially equally spaced radial arms, a pair of equalizers journalled on opposite sides of and floating independently of said hub, each equalizer including an annular plate have three circumferentially equally spaced radial arms, said arms of said equalizers alternating between each adjacent pair of hub



arms, compression spring sets interposed between said hub arms and equalizer arms to form three groups of spring sets acting in parallel with each group having three spring sets acting in series, and a pair of cover plates substantially enclosing said hub, equalizers and spring sets and operatively connected to said input member, each cover plate having three circumferentially equally spaced integral drive means therein interposed in the path of the spring sets.

4,279,133

LAYING-IN COMB FOR WARP KNITTING MACHINES

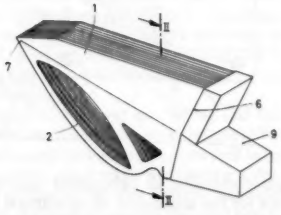
Peter Riesen, Elgg, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed May 5, 1980, Ser. No. 146,601

Claims priority, application Switzerland, May 18, 1979, 4643/79

Int. Cl.³ D04B *23/06, 23/08, 23/10, 23/12*

U.S. Cl. 66—84 R **14 Claims**



1. A laying-in comb for warp knitting machines, said comb having a plurality of spaced apart aligned sinkers, each said sinker having a head at one end, a securing end at the opposite end, a top edge extending between said ends, and a bottom edge longitudinally offset from said top edge at least at said securing end, said offset decreasing from said securing end to said head.

4,279,134

WARP-KNIT STRINGER TAPE FOR SLIDE FASTENERS

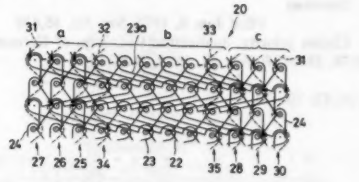
Yoshio Matsuda, Nyuzen, Japan, assignor to Yoshida Kogyo, K.K., Tokyo, Japan

Filed Jun. 20, 1979, Ser. No. 50,294

Claims priority, application Japan, Jul. 7, 1978, 53-82761

Int. Cl.³ D04B *21/00*

U.S. Cl. 66—195 **14 Claims**



1. A warp-knit stringer tape for slide fasteners having a pair of spaced edge portions and a central portion extending between said edge portions, said stringer tape comprising:

(a) a first set of yarns forming a knit ground structure containing stitch loops in every course and wale of said tape;

(b) a second set of yarns knitted in said ground structure and each extending coursewise across at least three wales, sinker loops of said second set of yarns being located, on one of opposite surfaces of the stringer tape, over said first set of yarns of said ground structure;

(c) a third set of yarns forming a plurality of chains of loops knitted in said ground structure and extending along wales in at least one of said edge portions; and

(d) a fourth set of yarns laid in said ground structure and extending in and along the last-named wales.

4,279,135

DYEING, WASHING AND/OR MILLING

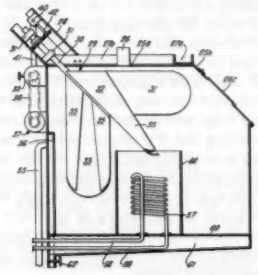
Andrew G. Cox, Bulls, New Zealand, assignor to Manawatu Textile Dyers Limited, Bulls, New Zealand

Filed Aug. 16, 1979, Ser. No. 67,197

Claims priority, application New Zealand, Mar. 28, 1979, 190029

Int. Cl.³ D06F *17/06;* **D06B** *3/30*

U.S. Cl. 68—15 **24 Claims**



1. A dyeing, washing and/or milling apparatus including a substantially circular working fluid reservoir; an island disposed centrally within said reservoir so as to define an annular channel within said reservoir; a plurality of paddle members mounted above said reservoir for uni-directional rotation about a fixed axis so that during rotation thereof said paddle members are displaced into and out of said channel to circulate working fluid therein around said channel; and supplementary circulation means to increase the circulation of a working fluid within

said reservoir over the circulation produced by said paddle means.

4,279,136

COMBINATION LOCK FOR SUITCASES, BAGS OR THE LIKE

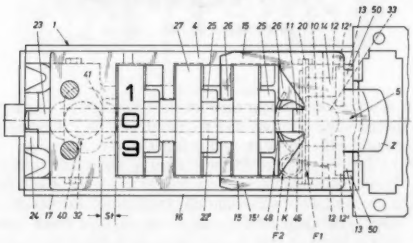
Peter Milles, Steimel-Alberthofen, Fed. Rep. of Germany, assignor to S. Franzen Sohne (GmbH & Co.), Fed. Rep. of Germany

Filed Jun. 4, 1979, Ser. No. 45,428

Claims priority, application Fed. Rep. of Germany, Jun. 26, 1978, 2828057; Feb. 17, 1979, 2906144

Int. Cl.³ E05B *65/52, 37/02*

U.S. Cl. 70—71 **3 Claims**



1. A combination lock for suitcases, bags, or the like, with a fastening hasp having a main shaft, a plurality of engageable blocking sleeves and number-setting dials arranged on said shaft, the movement of said sleeves when the correct combination of said lock is set establishing engagement slots, a latching slide member having a pair of fingers adapted to be moved axially into said engagement slots, spring means for normally urging said latching slide member into a latched position, and a latching slide portion projecting from said latching slide member for selective latching engagement with said hasp, characterized by said latching being coupled to said latching slide member for axial movement with respect thereto, said spring means including a spring element for normally resisting said movement, at least one of said blocking sleeves having a flange portion occupying said engagement slots to exclude said fingers of said latching slide member therefrom, said fingers being spaced a predetermined distance from each other, whereby said axial movement of said latching slide portion is prevented, including a chamber for receiving said one of said blocking sleeves upon its disengagement from its respective one of said dials, wherein said spring means is normally housed in said chamber and includes a first spring to normally maintain said sleeves and said dials engaged and a second spring to normally maintain said latching slide portion in the latching position with said hasp, and further including a support housing having a mounting slot therein, and wherein said chamber has a partitioning wall to provide a base for the spring action of at least said first spring, said wall extending into said chamber adjacent to but spaced from said main shaft, wherein said second spring is a leaf spring having at least one prong-end, said lock further including an inner support housing with a wall portion thereof having an aperture aligned opposite said prong-end of said second spring.

4,279,137

SECURITY DEVICE

Roy O. Cook, 2016 Main St., Houston, Tex. 77056

Filed Sep. 6, 1979, Ser. No. 73,144

Int. Cl.³ E05B *63/00*

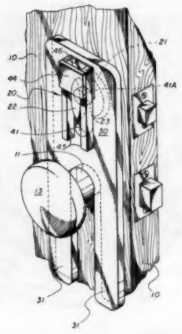
U.S. Cl. 70—416 **1 Claim**

1. A security device for use in conjunction with a door having a knob and a dead bolt, said device comprising:

a rigid, planar body portion including a pair of spaced apart legs forming the lower part thereof so spaced so as to straddle the shaft of said knob;

a vertically elongated aperture through said body of such size as to permit the handle of said dead bolt to pass therethrough and so arranged as to permit the body above the aperture to pivot about the handle shaft; and

means to prevent said handle from rotating sufficiently to open said dead bolt, said preventing means including said



legs, a pair of struts affixed to said body portion on opposite sides of said elongated aperture and separated by a distance less than the length of the handle of said dead bolt, and a plate member connecting said struts adjacent the upper reaches of said elongated aperture, said plate, struts and body portion forming a cavity for receiving one end of said dead bolt handle yet blocking rotation of said handle.

4,279,138

VEHICLE WITH A LIFTING DEVICE RESPONSIVE TO GROUND IRREGULARITIES

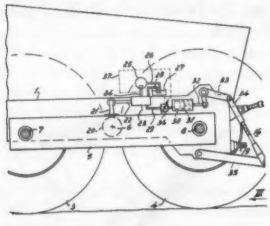
Cornelis Van Der Lely, Zug, and Cornelis J. G. Bom, Rozenburg, both of Netherlands, assignors to C. Van Der Lely N. V., Maasland, Netherlands

Filed Apr. 16, 1979, Ser. No. 30,377

Claims priority, application Netherlands, Apr. 20, 1978, 7804194

Int. Cl.³ A01B *63/114*

U.S. Cl. 172—4 **50 Claims**



1. A vehicle comprising an agricultural tractor having a hitching device for the attachment of agricultural machinery and implements, hydraulic control means being provided which is adapted to adjust said hitching device automatically in operation in response to unevenness of the ground over which the vehicle travels, at least two non-coaxial wheels being provided which are pivotable with respect to the rest of the vehicle about a common substantially horizontal transverse axis between the axes of rotation of said wheels, said wheels being interconnected by a frame, movement of which about said axis in response to ground unevenness, with respect to the

rest of the vehicle, causes actuation of said control means for adjustment of said hitching device.

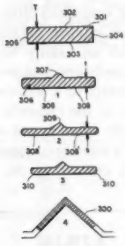
48. An agricultural tractor having a hitching device for the attachment of implements, hydraulic control means comprising a hydraulic cylinder and a control valve being provided which is adapted to adjust said hitching device automatically in operation in response to unevenness of the ground over which it travels by said cylinder, at least one sensing member being provided for sensing the occurrence of said unevenness, said sensing member actuating said control valve, a hydraulic pump for pressurizing at least said control means at a pressure having a relationship to the tractor's velocity, a throttle valve in a line provided between said control valve and said hydraulic cylinder, said throttle valve being adjustable as a function of the pressure of the hydraulic fluid pressurizing said control means.

4,279,139

METHOD OF ROLLING ANGLE STRUCTURAL SHAPES

Fernand Schmitz, Lorentzweiler, Luxembourg, assignor to ARBED Acieries Reunies de Burbach-Eich-Dudelange, Societe Anonyme, Luxembourg, Luxembourg

Filed Jul. 2, 1979, Ser. No. 55,038
Int. Cl.³ B21B *1/08*
U.S. Cl. 72—234 **8 Claims**



1. A process for the rolling of a structural shape having two flanges joining at substantially a right angle the process consisting of:

(a) rolling a rectangular-section bar to form at least one convex bulge along a surface of a resulting rolled blank and a pair or wings separated by said bulge and of a thickness of about one-half the thickness of said bar, said blank having a flat planar unrecessed surface on its side opposite said bulge;

(b) thereafter in a second pass rolling said blank to reduce the thickness of said wings to about one third the thickness formed in step (a) and to transform said bulge into a triangular-section ridge while maintaining a flat planar unrecessed surface on the side opposite said ridge;

(c) rolling the blank of step (b) in a third pass to round outer edges along a surface of said blank opposite the surface on which said ridge is formed while maintaining a flat planar unrecessed surface on the side opposite said ridge between the rounder outer edges; and

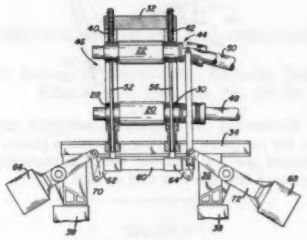
(d) after step (c) and without intervening steps bending said wings at a right angle to one another whereby said ridge forms a vertex between flanges of a structural shape resulting from the bending.

4,279,140

MILL ROLL BALANCE SYSTEM

John Gana, Buckingham Township, Bucks County, Pa., and Dwight L. Torlay, Lawrenceville Township, Mercer County, N.J., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Oct. 17, 1979, Ser. No. 86,003
Int. Cl.³ B21B *31/04*
U.S. Cl. 72—237 **12 Claims**



1. A mill roll balance system for a rolling mill of the type having a housing and two vertically displaced rolls which are driven from one side thereof and a mechanism for vertically driving the upper roll both toward and away from the lower roll, which is not vertically movable, said mill roll balance system comprising:

steelyard rod means extending from a point below the bottom of the housing through the housing and terminating in its upper extent in a supportive relationship with the upper roll;

separator means located below the housing of the rolling mill, said steelyard rod means and said separator means being movable with said upper roll as the latter is vertically moved, said separator means acting as a terminus for the lower portion of said steelyard rod means;

unbalanced counterweight means connected to said separator means for providing an upward and unbalanced force to the separator means so that the drive side of the rolls has a greater upward force than the non-driven side of the rolls for counteracting the downward forces from the vertical driving mechanism when such mechanism forces such top roll toward such lower roll thereby stabilizing such lower roll at a given desired position; and

a rigid beam assembly in supportive relationship with the separator means for guiding the separator means in a substantially vertical direction and counteracting any resultant horizontal forces upon the separator means due to the unbalanced forces resultant from said unbalanced counterweight means.

4,279,141

POWER TOOL

Robert Gallart, 107 Pershing Ave., Locust Valley, N.Y. 11560

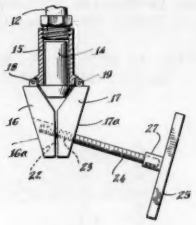
Filed Feb. 21, 1979, Ser. No. 13,517
Int. Cl.³ B21D *1/12, 37/04*
U.S. Cl. 72—482 **6 Claims**

1. An improved expandable jaw power tool, said tool including a piston moveable in a cylinder, force means coupled to said cylinder for driving said piston between a pair of spreadable jaws, said jaws coupled to said cylinder for pivotally separating when said piston is driven between said jaws by said force means said improvement including:

a tapped hole extending through one jaw of said pair of jaws, said tapped hole retaining of threaded shaft,

a slotted hole extending through the second jaw of said pair of jaws and substantially in alignment with said tapped hole in said one jaw, and of sufficient inside diameter for passing said threaded shaft therethrough,

said threaded shaft screw-coupled into said tapped hole and of sufficient length for extending into said slotted hole and



a power distributing bar coupled to said shaft and secured thereto for remotely applying expansion power between said second jaw and said bar which is normally applied between said one jaw and said second jaw.

4,279,142

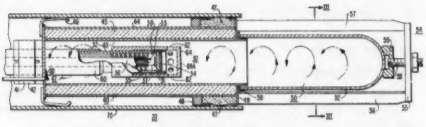
TECHNIQUE FOR IN SITU CALIBRATION OF A GAS DETECTOR

William H. McIntyre, Orrville, Ohio, assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 616,712, Sep. 25, 1975, Pat. No. 4,247,380. This application Aug. 31, 1979, Ser. No. 71,592

Int. Cl.³ G01M *19/00*

U.S. Cl. 73—1 G **1 Claim**



1. A method for calibrating a gas measuring probe having a gas sensing device located within a housing for generating electrical signals in response to the gas constituents of a monitored gas, comprising the steps of, flowing calibration gas into said housing, and deflecting the flow of said calibration gas to produce a spiral tubular calibration gas flow pattern within said housing to sweep said monitored gas from said gas sensing device and expose said gas sensing device to said calibration gas.

4,279,143

ELECTRONIC PINKING DETECTOR

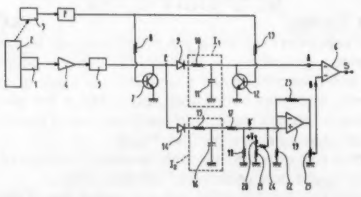
Serge C. Guipaud, Castelnaudary, France, assignor to Societe Pour l'Equipement de Vehicules, Issy-les-Moulineuax, France

Filed Dec. 26, 1979, Ser. No. 107,051

Claims priority, application France, Feb. 23, 1979, 79 04707

Int. Cl.³ G01L *23/22;* **F02P** *5/14*

U.S. Cl. 73—35 **12 Claims**



1. An electronic device for detecting pinking and capable of providing a signal S for altering the ignition displacement of an internal combustion engine, which device comprises, firstly, a vibration pick-up secured to the internal combustion engine for supplying a band-pass filter for selecting the frequency band corresponding to the pinking vibrations and, secondly, a comparator, the output of which provides signal S, and the two inputs A and B of which receive the output from the band-pass filter following different treatments carried out along two parallel channels, the channel which corresponds to the input B comprising an integrator I_2 followed by an amplifier, wherein, between the band-pass filter and the two channels, a gate is interposed which is opened only in a predetermined angular zone in the operation of the internal combustion engine.

4,279,144

TESTING VENTILATED CIGARETTES

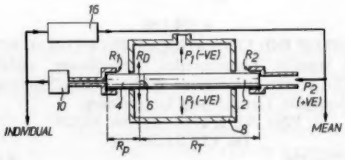
Reginald C. Bolt, London, England, assignor to Molins Limited, London, England

Filed Aug. 29, 1979, Ser. No. 70,726

Claims priority, application United Kingdom, Sep. 1, 1978, 35318/78

Int. Cl.³ G01N *15/08*

U.S. Cl. 73—38 **14 Claims**



1. A method of testing ventilated filter cigarettes comprising surrounding the wrapper of each cigarette in turn, including the ventilated area, with an axially extending, substantially enclosed, chamber at a predetermined pressure; connecting the tobacco end of the cigarette to a source of variable pressure; connecting the filter end of the cigarette to a transducer; controlling the pressure at the tobacco end of the cigarette so that the mean pressure (over a number of cigarettes) at the filter end transducer is zero; and measuring the said pressure at the tobacco end.

4,279,145

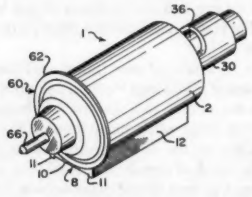
FUEL EFFICIENCY DISPLAY

Vernon F. Thompson, St. Louis, Mo., assignor to Tomco, Inc., St. Louis, Mo.

Filed Dec. 26, 1979, Ser. No. 106,555

Int. Cl.³ G01M *15/00*

U.S. Cl. 73—115 **4 Claims**



1. A fuel efficiency display device in the form of an intake manifold suction measuring and display device comprising an elongated housing with a hollow, open bottomed outer shell having a flat faced mounting boss extending lengthwise of and along the outside of said shell, a central, open ended sleeve with a cylindrical bore, said sleeve being spaced from and

connected to an inside wall of said shell by spiders and connected at its upper end to said shell by an uninterrupted annular wall, the lower open end of said shell being defined by a wall having a circular portion proportioned to admit a truncated conical part of a suction-responsive diaphragm assembly, said wall flaring inwardly, upwardly through said circular portion complementarily to said diaphragm assembly and proportioned to provide a press fit between said wall and the truncated conical part of said diaphragm assembly, said diaphragm assembly also including a cylindrical hollow boss projecting from said truncated conical part and a link, operatively connected to a diaphragm to move with said diaphragm, projecting through and beyond said boss; a hollow, open-ended cylindrical sight tube, the outside diameter of which is such as to provide a snug sliding fit with the bore defining wall of the said open ended sleeve in the housing, and the inside diameter of which is such as to provide a press fit with the outside surface of the cylindrical diaphragm assembly boss, said sight tube projecting, within said housing, to embrace said boss and projecting above the annular wall of the housing a substantial distance, said sight tube having a sight port in and through its wall above the annular wall of the housing and below the upper end of the sight tube; and an indicator spool, slidably journalled in said sight tube and connected at its lower end to said diaphragm assembly link and normally biased to a position at which it projects beyond the sight port, said indicator spool having indicia on it, visible through said sight port, to indicate the amount of suction being generated in said intake manifold when the diaphragm assembly is connected therewith.

4,279,146

APPARATUS FOR MEASURING THE AIR QUANTITY SUPPLIED TO AN INTERNAL COMBUSTION ENGINE

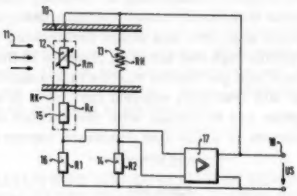
Wolf Wessel, Oberriexingen, and Dieter Handtmann, Sindelfingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 2, 1979, Ser. No. 63,631

Claims priority, application Fed. Rep. of Germany, Oct. 3, 1978, 2843019

Int. Cl.³ G01F *1/68*

U.S. Cl. 73—118 **2 Claims**



1. An apparatus for measuring the air quantity supplied to an internal combustion engine having an air intake manifold comprising, in combination, a bridge circuit comprising a first bridge arm and a second bridge arm and having a measurement sensor disposed in said air intake manifold, a measurement resistor, said measurement sensor and said measurement resistor being connected in series and disposed in said first bridge arm, three resistors disposed in said second bridge arm, a first resistor of said three resistors being located in said air intake manifold for the purpose of detecting the temperature of the medium to be measured and being connected in series with a second resistor of said three resistors to form a series combination which is connected in series with a third resistor of said three resistors, said apparatus further comprising a temperature control means for controlling the temperature of said measurement sensor to maintain the voltage at the connection of said measurement sensor and said measurement resistor essentially equal to the voltage at the connection of said series combination and said third resistor, said first and second resistors having different temperature coefficients and having resistance values such that a controllable excess temperature beyond the temperature of the medium to be measured is produced at said measurement sensor by said temperature control means independently of the temperature of the medium to be measured.

4,279,147

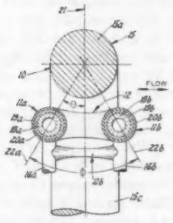
DIRECTIONAL HEAT LOSS ANEMOMETER TRANSDUCER

Robert S. Djorup, 20 Lovewell Rd., Wellesley, Mass. 02181

Filed Jan. 10, 1980, Ser. No. 110,841

Int. Cl.³ G01W *1/02*

U.S. Cl. 73—189 **8 Claims**



1. A directional heat loss anemometer transducer comprising:

(a) at least two similar, thermally and physically separated cylindrical resistive electrical conductors;

(b) each of said conductors having a length at least equal to the largest cross section dimension of the conductor;

(c) a cylindrical support member centrally disposed between and alongside said two resistive electrical conductors;

(d) said cylindrical support member having a straight central portion and a mounting portion on at least one end of said central portion;

(e) said electrical conductors being disposed as a parallel pair finitely separated, and mounted parallel to and in close proximity to the straight central portion of the cylindrical support member;

(f) said cylindrical support member straight central portion being disposed so that a plane containing the parallel central axes of said two resistive electrical conductors is spaced from the cylindrical support member central portion and is perpendicular to a plane containing the central axis of said cylindrical support member straight central portion and disposed between said two resistive electrical conductors, said cylindrical support and resistive electrical conductor axial centers defining an acute angle between center lines through each of said resistive electrical conductors and said cylindrical support when viewed in cross section;

(g) a thermo insulating connective bridging means operatively disposed between said two resistive electrical conductors and closing the space between said resistive electrical conductors, thereby preventing connected flow completely around one conductor of said two resistive electrical conductors, independent of the other conductor;

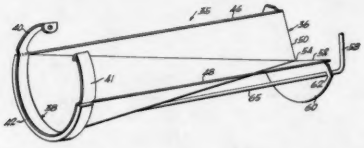
(h) said two resistive electrical conductors being supported in the protected lee of the support member straight central portion by attachment means to the support member; and,

(i) each of said resistive electrical conductors being provided with electrical connection means, whereby each resistive electrical conductor can be electrically heated by an electrical current passed through each conductor.

4,279,148
ANTI-CLOGGING FLUME AND STRUCTURE FOR METERING FLUID FLOW

Joseph C. Fitzgerald, 439 Minorca Ave., Coral Gables, Fla. 33134

Filed May 5, 1980, Ser. No. 146,637
Int. Cl.³ G01F *1/20*
U.S. Cl. 73—215 **7 Claims**

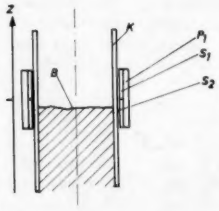


1. A flume for use in measuring flow through a pipe, said flume being adapted for installation in the pipe, said flume comprising; a length having an inlet and an outlet end and an interior surface and an exterior surface, said inlet end being generally circular, said outlet end having a V-shaped cross section, said length having a floor and side walls extending between the ends and defining a flow guide, said flow guide walls and floor converging smoothly upwardly from said inlet end to said outlet end, said walls and floor at said outlet defining a V-shaped weir spillway, means on the flume adjacent the inlet end to constrain substantially all the flow through the pipe to flow along the flow guide, means to support the outlet end of the flume, said flume having a hole in the floor portion adjacent the inlet end at substantially the lowest portion of the floor, a conduit for fluid communication with a remote source of pressurized gas, connector means to connect the conduit in fluid communication with the hole to bubble gas from the source through a liquid flowing over the flow above the hole, said conduit and said means to connect being supported by said flume exteriorly of said flow guide, and said means to connect comprising a fitting fixed to the exterior surface about the hole.

4,279,149
PROCESS FOR MEASURING THE LEVEL OF METAL IN VESSELS, ESPECIALLY IN CONTINUOUS CASTING MOLDS

Franz-Rudolf Block, Roetgen, Fed. Rep. of Germany, assignor to ARBED Aciéries Réunies de Burbach-Eich-Dudelange, Société Anonyme, Luxembourg, Luxembourg

Filed Oct. 24, 1979, Ser. No. 87,708
Claims priority, application Luxembourg, Oct. 25, 1978, 80410
Int. Cl.³ G01F *23/28*
U.S. Cl. 73—290 R **12 Claims**



1. A method of detecting the level of the top of a column of molten metal in a continuous casting mold which comprises the steps of:

surrounding the column with a primary coil and energizing the primary coil with an electric current to induce a magnetic field within the column;

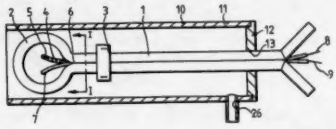
disposing a pair of symmetrical secondary coils in a coaxial relationship with said primary coil and connecting said secondary coils in a circuit opposition whereby secondary currents are induced in said secondary coils by said magnetic field; and

detecting the resultant voltage induced in said secondary coils, thereby deriving a value representing the position of the top of said column with respect to a plane of symmetry of said secondary coils and hence an asymmetrical orientation of said column relative to said secondary coils.

4,279,150
APPARATUS FOR DETERMINING VAPOR CONTENT OF A GAS/VAPOR MIXTURE

Thomas Land, Grindleford, England, assignor to Land Pyrometers Limited, Dronfield, England

Filed Dec. 28, 1979, Ser. No. 108,002
Claims priority, application United Kingdom, Jan. 11, 1979, 00837/79
Int. Cl.³ G01N *25/64*
U.S. Cl. 73—338 **21 Claims**

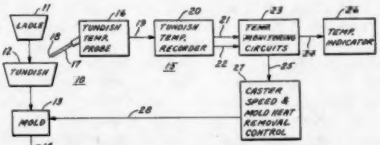


1. Apparatus for determining the vapour content of a gas/vapour mixture, said apparatus comprising two temperature sensing devices, one of said devices being adapted to measure the temperature of a gas/vapour mixture in which said device is immersed; a wick in contact with the other of said devices; a cooling device for condensing vapour from said gas/vapour mixture to maintain a liquid supply for said wick, said other temperature sensing device being adapted to measure the temperature of said liquid evaporating from said wick, said cooling device comprising a reservoir for collection of said condensed vapour and in which part of said wick in located, and a tube; said apparatus further comprising a sampling chamber in which said tube is mounted, means for circulating a cooling medium through said tube, and means for drawing the gas/vapour mixture through said sampling chamber so that vapour condenses out of said gas/vapour mixture onto a surface of said tube to form said reservoir, wherein two parts of said tube extend alongside and in contact with one another to form a V-shaped reservoir in which said condensed vapour collects.

4,279,151
TEMPERATURE MEASURING SYSTEM

Jack A. Anderson, Porter, Ind., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Aug. 7, 1979, Ser. No. 64,468
Int. Cl.³ G01K *7/04*
U.S. Cl. 73—343 R **13 Claims**



1. A temperature measuring system having temperature probe means which is at times subject to error or discontinuous operation and is insertable into heated material, and means responsive to the probe means for determining material tem-

perature and producing a temperature signal proportional thereto, the improvement comprising:

(a) monitor circuit means for periodically sampling the temperature signal and periodically holding separate indicator and control temperature signal values at corresponding indicator and control outputs, the held indicator signal representing either present good or abnormal temperature measurements, the held control signal representing the last good temperature measurement to be made which may be the present one.

4,279,152

TEMPERATURE RESPONSIVE DEVICE

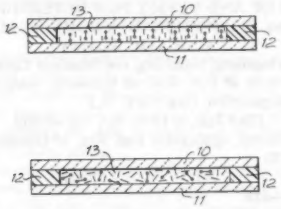
William A. Crossland, Harlow, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Feb. 22, 1979, Ser. No. 13,868

Claims priority, application United Kingdom, Mar. 2, 1978, 8393/78

Int. Cl.³ C09K *3/34*; G02F *1/13*; G01K *11/06, 11/16*

U.S. Cl. 73—356 **8 Claims**



1. A temperature indicator that provides a visual indication as to whether its temperature is above or below each of at least two predetermined threshold values, comprising at least two temperature responsive cells each of said cells comprises a liquid layer the major constituent of which is a liquid that exhibits a nematic-isotropic or smectic-isotropic phase transition, in which layer a pleochroic dye has been dispersed, which layer is bounded by cell walls formed by two plates at least one of which is transparent and wherein the interior of said walls are such that homeotropic alignment is induced in said liquid without the application of an electric field when its temperature is below that of said phase transition and wherein the liquid in one cell has a different phase transition temperature from that of the liquid in another cell.

4,279,153

APPARATUS FOR MEASURING THE TEMPERATURE OF A GAS FLOW TRAVERSING A GRID OF BLADES

Robert Kervistin, Le Mee sur Seine, and Alain M. J. Lardellier, Melun, both of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, Victor, France

Filed Sep. 7, 1979, Ser. No. 73,361

Claims priority, application France, Sep. 12, 1978, 78 26636

Int. Cl.³ G01K *11/00*

U.S. Cl. 73—357 **14 Claims**

1. An apparatus for measuring the temperature of a gas flow, said apparatus comprising:

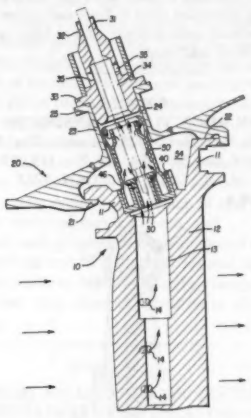
a crankcase having an axis;

a grid of blades constituted by a plurality of stationary blades having heels, said blades being disposed in said crankcase and affixed by their heels to said crankcase with the vanes of said blades extending towards said axis;

a channel extending through at least a portion of the length of at least one of said vanes, said channel extending towards said axis from an aperture in said heel of said vane, said aperture facing the interior surface of said crankcase;

a plurality of openings in said at least one vane, spaced along a line of generation on the surface thereof, said openings extending into said channel so as to communicate the gases in said crankcase with said channel;

an aperture in the surface of said crankcase and facing said aperture in said heel wherein said apertures and said channel form a gas escape circuit;



a temperature sounder including an electrical connection for delivering a signal corresponding to the temperature of said sounder;

means for maintaining said sounder in said escape circuit and in communication with said gases, said means comprising a nozzle fixed in said escape circuit and surrounding said sounder.

4,279,154

SURFACE TEMPERATURE MEASURING DEVICE

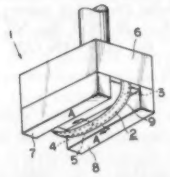
Tsuneo Nakamura, Tokyo, Japan, assignor to Anritsu Keiki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 28, 1979, Ser. No. 80,170

Claims priority, application Japan, Sep. 30, 1978, 53-133553[U]

Int. Cl.³ G01K *1/16, 7/02*

U.S. Cl. 73—359 R **9 Claims**



1. In a surface temperature measuring device for measuring the temperature of the surface of a body wherein the temperature sensing section includes a thermocouple member having an outer surface portion adapted for heat and pressure contact with the surface of the body to measure the temperature thereof, the improvement which comprises a slippery, electrically insulted layer of film integrally bonded to at least said outer surface portion of said thermocouple member, said layer of film being between 5 and 100μ thick and formed of a resin selected from the group consisting of fluorocarbon resin, polyamide resins and polyimide resins, there being further included a pair of laterally spaced apart, resilient metal strips extending in parallel with and along both sides of the thermocouple

member, each said strip having an outer surface part adapted to pressure contact the surface of the body whose temperature is to be measured, said outer surface portion of said thermocouple member cooperating with said outer surface parts of said strips, whereby said thermocouple member including said film layer is deformable in association with said strips and may be brought into pressure contact with the surface of the body, said layer being provided over at least said outer surface portion of said thermocouple member and at least said outer surface part of each of said strips.

4,279,155

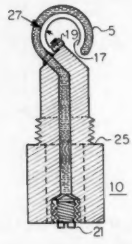
BOURDON TUBE TRANSDUCER

Hayati Balkanli, P.O. Box 35725, Houston, Tex. 77035

Filed Jan. 24, 1980, Ser. No. 115,003

Int. Cl.[3] G01K *5/36;* **G01L** *9/12*

U.S. Cl. 73—368.6 **4 Claims**



1. An environmental parameter transducer comprising:
a bourdon tube means for sensing an environmental parameter at a remote port;
an electrical circuit controlled by the bourdon tube means;
means for providing an electrical reactance in the electrical circuit means, including an electrical conductive plate that has the same curvature as the bourdon tube means, of the same material as the bourdon tube means; and
means for retaining the conductor in a parallel configuration with the bourdon tube means separated therefrom by a preselected distance and electrically insulated therefrom.

4,279,156

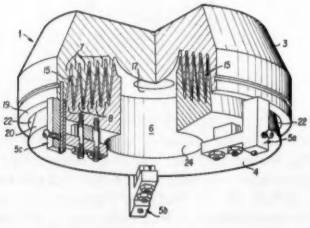
PARTICLE COLLECTOR AND FRACTIONATOR

John P. Bell, Raleigh, N.C., assignor to The United States of America as represented by the Administrator of the United States Environmental Protection Agency, Washington, D.C.

Filed Nov. 29, 1979, Ser. No. 89,011

Int. Cl.[3] G01N *1/24*

U.S. Cl. 73—863.22 **12 Claims**



1. A particle collector and fractionator, comprising
(a) a bottom fractionating member having a plurality of concentric corrugations circumscribed by an edge portion,
(b) a top fractionating member having a plurality of concentric corrugations which are complementary to the concentric corrugations of said bottom fractionating member, and which are likewise circumscribed by an edge portion,
(c) at least one spacer bracket for spacing the corrugations of said top fractionating member over the corrugations of said bottom fractionating members in complementary relationship and forming an annular, concentrically corrugated gas flow path between said members which is circumscribed by a 360° gas slit defined between said edge portions of said fractionating members, and
(d) means for withdrawing particle laden gas from the center of said annular, concentrically corrugated flow path,
whereby particles in a stream of particle laden gas flowing into said flow path from said 360° gas slit and out through said gas withdrawal means are collected in each of the valley portions of said corrugations of said fractionating members.

4,279,157

METHOD OF AND DEVICE FOR DETERMINING THE INTERNAL STRUCTURE OF A BODY BY MEANS OF ACOUSTIC BEAMS

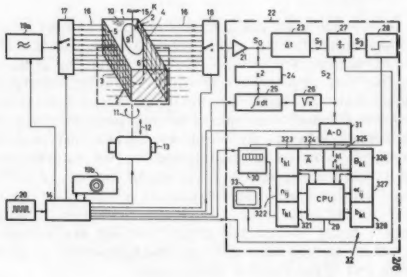
Hermann Schomberg, Hamburg, and Manfred Tasto, Henstedt-Ulzburg, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 6, 1979, Ser. No. 45,900

Claims priority, application Fed. Rep. of Germany, Jun. 22, 1978, 2827423

Int. Cl.[3] G01N *29/00*

U.S. Cl. 73—618 **17 Claims**

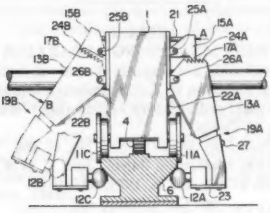


1. In a method for determining the internal structure of a body comprising the steps of:
passing a plurality of acoustic beams through a body in different directions from one or more acoustic transmission elements to one or more separate acoustic reception elements; measuring the value of the transit time of each of said beams through the body; and utilizing the measured transit time values to calculate the value of the acoustic refractive index at points in a matrix associated with the body; the improvement comprising the steps of:
first assuming a distribution of acoustic refractive index values at preselected points in the matrix, which approximate known body structure, said assumed distribution taking into account the geometry of the transmission and reception elements;
using said assumed distribution to calculate the path of each of said beams throught the body;
calculating an assumed transit time for each beam along the determined paths; and
then comparing the assumed transit time with the measured value of the transit time to generate step-wise corrections for the calculated value of the acoustic refractive index at points in the matrix.

4,279,158
ULTRASONIC FLAW DETECTOR DRIVING APPARATUS

Sigeru Kajiyama; Kimio Kanda, both of Hitachi, and Sakae Sugiyama, Ibaraki, all of Japan, assignors to Hitachi, Ltd. and Babcock-Hitachi Kabushiki Kaisha, both of Tokyo, Japan

Filed Jul. 26, 1979, Ser. No. 61,050
Claims priority, application Japan, Jul. 28, 1978, 53-92939
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—637 **10 Claims**



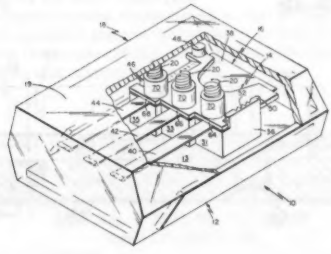
1. An ultrasonic flaw detector driving apparatus movable on a guide rail for enabling a detecting of a flaw of an object for inspection, the ultrasonic flaw detector driving apparatus includes a main frame, characterized in that means are provided for movably holding the main frame of said driving apparatus on said guide rail including

at least one arm mounted on at least one side face of said main frame of said driving apparatus in such a manner so as to allow the arm to move in an opening and a closing direction, teeth formed at one end of said arm, a pawl mounted on said driving apparatus, said pawl being adapted to be brought into engagment with and to be disengaged from said teeth, first resilient means for providing a force acting on the at least one arm in such direction so as to cause said teeth to be engaged by said pawl, and roller means mounted on said at least one arm, the roller means being adapted to be brought into rolling contact with said guide rail, said at least one arm extends in a direction substantially perpendicular to a longitudinal direction of the guide rail when said at least one arm is in a closed position.

4,279,159
VIBROMETER

J. Laurence Powell, 19 Hiddenfield St., Andover, Mass. 01810, and Richard A. Powell, 6102 N. Glenwood, Chicago, Ill. 60660

Filed Jul. 16, 1979, Ser. No. 57,572
Int. Cl.³ G01D *21/00*
U.S. Cl. 73—651 **25 Claims**



1. A vibrometer comprising:

a support adapted for removable mounting on a vehicle and defining a generally planar reed support surface;

a reed clamp defining a generally planar reed support surface and mounted on said support with said reed support surface thereof facing said reed support surface of said support;

a reed unit disposed between and engaging said reed support surfaces, said reed unit comprising a base portion and at least two projecting vibratory reed portions and being movable relative to said support between at least two predetermined positions, one of said reed portions having an effective length that is a predetermined amount greater than that of the other of said reed portions when said reed unit is in either of said predetermined positions, and each of said reed portions being of greater effective length when said reed unit is in one of said positions than when said reed unit is in the other of said positions thereof,

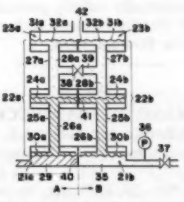
cooperating indicia on said reed unit and one of said support and said clamp indicating in which of said predetermined positions said reed unit is located; and,

a cover over and generally surrounding said reeds, the generally vertical end of said cover nearest the free ends of said reed portions being essentially transparent whereby an observer may observe vibration of the ends of said portions.

4,279,160
PRESSURE MEASURING APPARATUS WITH TEMPERATURE COMPENSATING MEANS

Tomihiro Fukada, Nagareyama, and Mitsuru Kamei, Mito, both of Japan, assignors to Doryokuro Kakunenryo Kaihatsu Jigyodan, Tokyo, Japan

Filed Oct. 23, 1979, Ser. No. 87,530
Claims priority, application Japan, Oct. 25, 1978, 53-146856[U]
Int. Cl.³ G01L *19/04*
U.S. Cl. 73—708 **6 Claims**

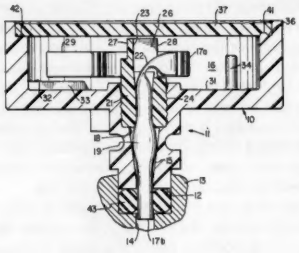


1. A pressure measuring apparatus using pressure transmission media and having a measuring system divided by partitions into three, i.e. a pressure receiving portion, a pressure transmitting portion and a pressure detecting portion, said pressure transmitting portion being divided by a pressure transmission wall into two, i.e. a section on the side of said pressure receiving portion which contains a liquid NaK alloy, and a section on the side of said pressure detecting portion which contains a heat-resisting inert liquid, so that a pressure of a fluid to be measured which is introduced into said pressure receiving portion is transmitted to said pressure detecting portion through the pressure transmitting portion so as to be measured with a pressure detector provided in said pressure detecting portion, characterized in that said apparatus further comprises a compensation system which has substantially the same construction as the measuring system and is disposed in substantially the same surroundings as that in which the measuring system is disposed, and that the compensation system contains in its pressure transmitting portion a liquid NaK alloy and a heat-resisting inert liquid, the volumes of which are equal to those contained in the pressure transmitting portion of the measuring system, and contains in its pressure receiving portion a gas, whereby the apparatus permits carrying out temperature compensation by subtracting a detected pressure in the compensation system from that in the measuring system.

4,279,161
GAUGE

Paul O. Huston, 31 Lenape Dr., Montville, N.J. 07045, and Alfred Munn, Three Wills Ave., Wayne, N.J. 07470

Filed Aug. 8, 1979, Ser. No. 64,915
Int. Cl.³ G01L *7/04*
U.S. Cl. 73—743 **13 Claims**



1. A gauge for indicating fluid pressure having a casing with an outwardly protruding mounting stem and a viewing crystal, the gauge comprising:

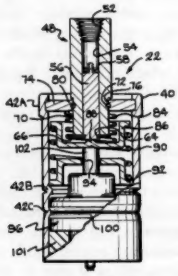
a Bourdon tube pressure responsive element mounted in the casing and having a pointer displaceable along a predetermined path in response to the pressure of the fluid, a substantially tubular portion of said Bourdon tube axially traversing the mounting stem through a central bore therein; and

means rotatably securing said tube to the casing for locating said pointer at a first position before assumbly of the viewing crystal which retains said Bourdon tube against translational movement along the axis of the stem, said securing means comprising a sleeve surrounding said tubular portion within the stem and having a radial slot to embrace a substantially radially protruding section of said Bourdon tube thereby to exert both axial and rotational control over the Bourdon tube.

4,279,162
PRESSURE TRANSDUCER

Daniel L. Neill, Belleville, and Leonard T. Tribe, Ann Arbor, both of Mich., assignors to Kelsey-Hayes Company, Romulus, Mich.

Filed Nov. 23, 1979, Ser. No. 96,861
Int. Cl.³ G01L *7/16, 9/02*
U.S. Cl. 73—746 **12 Claims**

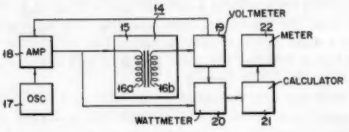


1. A transducer for hydraulic systems comprising, in combination, a housing having an inner surface including at least one inwardly directed stop, an elongate cylinder member defining an inlet at one end in communication with a cylinder, a piston slidably disposed within said cylinder, mounting means disposed adjacent one end of said cylinder for receiving said cylinder member, means for rotatably securing said cylinder member to said mounting means, a first spring mount slidably disposed within said housing in generally abutting relationship with said piston, a first spring disposed between said first spring mount and said mounting means, a second spring mount disposed in generally abutting relationship against said inwardly directed stop, a second spring disposed between said first and second spring mounts and transducer means including a translating member disposed in generally abutting relationship with said first spring mount for providing an electrically significant output representative of a hydraulic pressure applied to said piston.

4,279,163
STRESS MEASURING APPARATUS

Yoshikazu Takekoshi, and Takeshi Yagisawa, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki and Shibaura Engineering Works Co., Ltd., Tokyo, both of, Japan

Filed May 23, 1979, Ser. No. 41,884
Claims priority, application Japan, Jun. 2, 1978, 53/66335; Jun. 6, 1978, 53/67203; Apr. 6, 1979, 54/41010
Int. Cl.³ F16B *31/02*
U.S. Cl. 73—761 **6 Claims**



1. A stress measuring apparatus for sensing a magnetic state of an object to measure a stress of the object comprising:

a magnetic sensor for sensing magnetic state of the object;

an AC power source for feeding an AC power to said magnetic sensor;

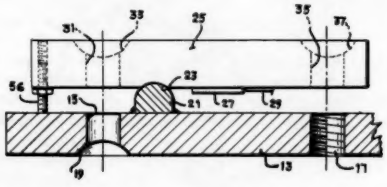
calculating means for calculating a variation of a core loss on the basis of an output supplied from said magnetic sensor; and

means for converting the variation of the core loss into a stress of the object.

4,279,164
METALLURGICAL SPECIMEN TESTER

Merrill P. Hawke, Lytle; Pete Elizalde, Jr., and Robert L. Harris, both of San Antonio, all of Tex., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jan. 28, 1980, Ser. No. 115,843
Int. Cl.³ G01N *3/08*
U.S. Cl. 73—826 **5 Claims**



1. A metallurgical specimen tester for testing a plurality of like specimens in tension over a relatively long period of time, said specimen tester comprising a steel plate having at least two aligned spaced apart openings therein, one of said openings being threaded, an upstanding pivot positioned on the

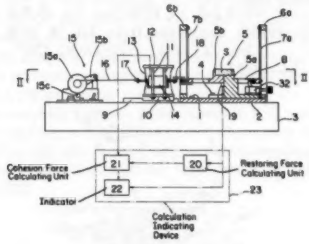
upper surface of said steel plate between said openings, a cantilever beam positioned in substantially parallel relationship above said steel plate and spaced therefrom, two aligned spaced apart openings in said cantilever beam in axial alignment with the openings in said steel plate, the lower surface of said cantilever beam being in contact with the upper end of said upstanding pivot, a specimen disposed in two of the axially aligned openings in said steel plate and said cantilever beam, a hardened steel stud positioned in two of the other axially aligned openings in said steel plate and said cantilever beam, and a threaded nut in engagement with one end of said stud whereby the torquing of said threaded nut causes one end of said cantilever beam to rotate downward around said pivot and apply a tension force to the specimen positioned between the other end of said cantilever beam and said steel plate.

4,279,165

APPARATUS FOR MEASURING COHESION FORCE OF PARTICULATE MATERIALS

Tohei Yokoyama; Shintaro Asakura, both of Kyoto; Kiyoshi Urayama, Yahata, and Kenji Fujii, Kyoto, all of Japan, assignors to Kabushiki Kaisha Hosokawa Funtai Kogaku Kenkyusho, Osaka, Japan

Filed Nov. 13, 1979, Ser. No. 93,774
Claims priority, application Japan, Aug. 9, 1979, 54/101656
Int. Cl.³ G01N *3/08*
U.S. Cl. 73—826 **6 Claims**



1. An apparatus for measuring the cohesion force of a particulate material comprising,

a bottomed container (**5**) composed of a fixed container segment (**5***a*) and a movable container segment (**5***b*) separable from each other for containing the particulate material (S) as compactly placed therein,

drive means (**15**) for moving the movable container segment (**5***b*) in a direction substantially perpendicular to the plane of separation of the container (**5**) to divide the particulate material (S) in the container (**5**) into two, and

an external force detecting unit (**14**) for detecting the external force to be applied to the movable container segment (**5***b*) by the drive means (**15**),

the apparatus being characterized in that at least the movable container segment (**5***b*) of the two container segments (**5***a*), (**5***b*) is suspended from and retained by swingable or deflectable support means.

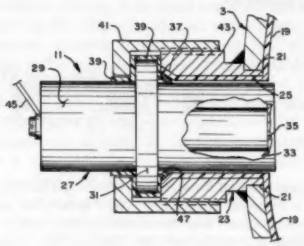
4,279,166

FIELD REPLACEABLE ELECTRODE ASSEMBLY FOR MAGNETIC FLOWMETER

Felix J. Gryn, Hatfield, and James E. Young, Harleysville, both of Pa., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Aug. 9, 1979, Ser. No. 65,168
Int. Cl.³ G01F *1/58*
U.S. Cl. 73—861.12 **12 Claims**

1. An electrode assembly adapted to be sealably installed on a meter body or the like, said meter body having a liner on the inside thereof of suitable electrical insulation material and an opening therethrough for accommodating said electrode assembly, said electrode assembly comprising a fitting adapted to be sealably secured to said meter body and to extend outwardly therefrom, said fitting having an axial bore therethrough and a tapered seat at the exterior end thereof, said liner being a continuous coating of a suitable applied-in-place electrical insulating material covering the interior of said meter body adjacent said opening and extending into said axial bore of said fitting, said assembly further comprising an electrode adapted to be inserted in and removed from said bore from the



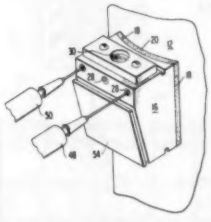
exterior of said meter body, said electrode having a flange extending outwardly therefrom, means for electrically insulating said flange from said fitting, fastener means cooperable with said flange and said fitting for holding said electrode within said bore in a sensing position in which it is in sensing relation with fluid flowing through said meter body, and means in said tapered seat for sealing said electrode with respect to said fitting.

4,279,167

LIQUID COUPLING FOR DOPPLER SONIC FLOWMETER

Tom L. Erb, and Wendell D. Miller, both of Austin, Tex., assignors to Ramsey Engineering Company, St. Paul, Minn.

Filed Oct. 1, 1979, Ser. No. 80,730
Int. Cl.³ G01F *1/66;* **G01N** *29/02*
U.S. Cl. 73—861.25 **23 Claims**



19. A method of coupling transducer means of a sonic flowmeter apparatus to a conduit within which the flow of a media is to be measured, said method comprising the steps of:

(a) providing a liquid-tight cavity between a wall of said conduit and said transducer means; and

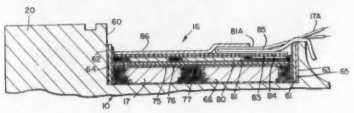
(b) substantially filling said liquid-tight cavity with a liquid having a substantially constant sound transmission temperature coefficient by inserting a hypodermic needle through membrane means provided in a wall of said liquid-tight cavity.

4,279,168

MASS RATE OF FLOW METER WITH ELECTROMAGNETIC INTERFERENCE COMPENSATION

John S. Wyler, Andover, Mass., and Richard A. Pfuntner, Alfred, Me., assignors to General Electric Company, Wilmington, Mass.

Filed Oct. 12, 1979, Ser. No. 84,391
Int. Cl.³ G01F *1/80*
U.S. Cl. 73—861.35 **11 Claims**



1. In a mass rate of flow meter including a housing means for defining a passage for a fluid, swirl generator means, unrestrained rotor means and restrained turbine means axially displaced along a longitudinal axis through the housing means, first sensing means for detecting the passage of a predetermined point on the rotor means past a predetermined point on the housing means, and a second sensing means including magnet means on the rotor means and turbine means for detecting the passage of another predetermined point on the rotor means past a predetermined point on the turbine means, the improvement of sensing coil means for the second sensing means that is characterized by reduced sensitivity to electromagnetic interference, said sensing means comprising:

A. sensing coil means mounted to the housing means in a coaxial, axially coextensive relationship with at least a portion of the turbine means,

B. bucking coil means mounted coaxially with said sensing coil means and electrically connected with said sensing coil means, and

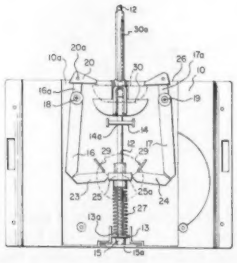
C. phase correcting means disposed between said sensing coil means and said bucking coil means and including a shorted turn of nonmagnetic, electrically conductive material for shifting the selective phase of signals produced in said sensing coil means and said bucking coil means in response to electromagnetic interference.

4,279,169

TIMER LATCH MECHANISMS

John P. Hancovsky, Greensburg, Pa., assignor to Fonas Corporation, Latrobe, Pa.

Filed Oct. 17, 1979, Ser. No. 85,407
Int. Cl.³ G05G *17/00*
U.S. Cl. 74—3.54 **6 Claims**



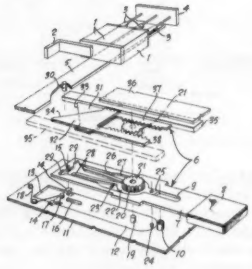
1. A timer latch mechanism comprising a housing, a latch chamber in said housing having an opening at one end, guide means extending centrally of said chamber toward said opening, a pair of elongate arms on opposite sides of said guide means pivoted intermediate their ends in said chamber, one end of each arm extending to a point adjacent said opening, a resiliently biased pawl pivoted on said one end of each arm, said pawls normally extending transversely to said arms toward said guide means in a closed latch position and pivotable to an open unlatched position generally parallel to said arms, the other end of each said arm being pivotally connected to one end of a transverse link, a trip arm slidably mounted on said guide means, resilient biasing means urging said trip arm toward said opening, the other end of each said link being pivotally connected to said trip arm, stop means on the housing limiting the movement of said trip arm toward said opening, timer means on said housing, actuator means on said timer means to move said trip arm against the resilient biasing means and away from said stop means at a preselected time whereby the said other ends of said elongate arms are moved toward each other and the pawls are moved away from each other, and gate means slidable on said guide means in and out of said opening, said gate means being held by said pawls in said opening and released from said pawls when the trip arm is moved by the timer actuator means, said gate means being adapted to be fixed to a means which is desired to be selectively latched and released.

4,279,170

PUSHBUTTON TUNER

Nardino Righi, and Mario C. Ferrari, both of Milan, Italy, assignors to Ri-El Richerche Elettroniche S.p.A., Cologno Monzese, Italy

Filed Jul. 25, 1979, Ser. No. 60,520
Claims priority, application Italy, Jul. 28, 1978, 12729 A/78
Int. Cl.³ H03J *5/12*; G05G *1/02*
U.S. Cl. 74—10.33 **10 Claims**

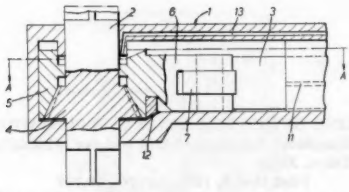


1. A pushbutton tuner particularly adapted for automobile radio sets, comprising a plurality of pushbutton assemblies arranged side by side and parallel to each other, each pushbutton assembly being movable in its longitudinal direction toward and away from a control bar slidably arranged transversely with respect to the pushbutton assemblies and operatively connected with the tuner group of the radio set, wherein the improvement comprises of the fact that the transverse control bar carries at least one abutment element for each pushbutton assembly, while each pushbutton assembly carries two plates presenting inclined edges which intersect each other so as to form a V-shaped notch, at least one plate being movable and adjustable with respect to the other in the longitudinal direction of the pushbutton assembly, said V-shaped notch adapted to cooperate with the respective abutment element provided on the transverse control bar, whereby, whenever a pushbutton assembly is pushed to a position for the selection of the desired frequency, one of the said inclined edges of the V-shaped notch of the pushbutton assembly abuts against the respective abutment element on the control bar and promotes the shifting of said transverse control bar in its longitudinal direction, until the other one of said inclined edges of the V-shaped notch abuts against said abutment element.

4,279,171
TORQUE APPLICATOR

Tor T. Fylling, Olaf Schous vei 18, Oslo 5, Norway

Filed Jun. 8, 1979, Ser. No. 46,840
Claims priority, application Norway, Jun. 13, 1978, 782057
Int. Cl.[3] B25B *13/46;* F16H *27/02*
U.S. Cl. 74—128 4 Claims



1. A torque applicator, comprising:

a housing;

a double-acting piston and rotatable torque applicator stem mounted within said housing and actuated by said double-acting piston;

two coupling members being mounted on said torque applicator stem, each coupling member including teeth alternately engageable with the teeth on the other coupling member, one of said coupling members being non-movably mounted on said stem and the other of said coupling members being mounted for axial movement on said stem;

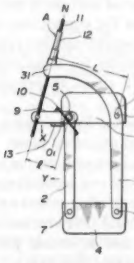
said movable coupling member including a radial arm having a free end cooperating with said double-acting piston to cause a reciprocating rotary movement of the axially movable coupling member with respect to said stem; and

means for applying a pressurized fluid alternately on one face and the opposite face of said movable coupling member in synchronization with the actuation of said double-acting piston.

4,279,172
DERAILLEUR FOR A BICYCLE

Masashi Nagano, and Mitsuhide Isobe, both of Sakai, Japan, assignors to Shimano Industrial Company Limited, Osaka, Japan

Filed Dec. 20, 1977, Ser. No. 862,630
Claims priority, application Japan, Dec. 28, 1976, 51/157886
Int. Cl.[3] F16H *11/04*
U.S. Cl. 474—82 6 Claims



1. A derailleur for a bicycle, controllable by a Bowden cable having an inner wire and an outer sheath to change the bicycle speed by shifting a driving chain when said driving chain is moving, said derailleur comprising:

(a) a pantograph mechanism,

said pantograph mechanism comprising; a stationary member; first and second linkage members each pivoted by one of their ends to said stationary member; and a movable member pivotally mounted to the other ends of each of said linkage members; said second linkage member extending at one of its ends outwardly to form an extension, said extension having at its distal end a first retaining means for retaining one of said inner wire or outer sheath, said movable member carrying a chain guide for guiding said driving chain;

(b) a pivotal member pivoted to one of said stationary member, movable member or first linkage member of said pantograph mechanism;

said pivotal member having at its distal end a second retaining means for retaining the other of said inner wire or outer sheath, the perpendicular distance from the center line of second retaining means to the pivot point of said pivotal member being smaller than that from the center line of said first retaining means to the pivot point around which said extension of the second linkage member pivots,

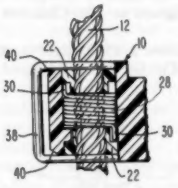
(c) an abutment for limiting the movement of said pivotal member in a direction away from said extension of said linkage member, and

(d) a spring between said pivotal member and another member movable relative thereto, said spring biasing said pivotal member in the direction away from said extension of the second linkage member against said abutment and biasing said movable member toward one change state; whereby when a shifting force is applied between the inner wire and outer sheath during motion of said driving chain, said extension of said linkage member moves toward said pivotal member whereby said movable member changes positions and said spring provides a return force for returning said movable member after said driving chain has been shifted, and provides storage of a force for shifting said movable member when said driving chain is at rest.

4,279,173
BACKLASH FREE ADJUSTING MECHANISM

Fred G. Krebs, Rochester, and Daniel B. Abbott, Farmington Hills, both of Mich., assignors to Burroughs Corporation, Detroit, Mich.

Filed Feb. 5, 1979, Ser. No. 9,347
Int. Cl.[3] F16H *55/18*
U.S. Cl. 74—441 10 Claims



1. Backlash free adjusting apparatus comprising,

a helical shaft having a spiral thread extending from end to end thereof,

carrier support means disposed on said shaft for movement along said shaft,

oppositely disposed concentric members threadedly engaging said helical shaft and slideable there along,

spring means interposed between said concentric members and captivated by said concentric members so as to prevent rotation thereof, and

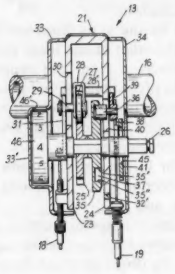
means in said support means for restraining one of said concentric members against rotation while the opposite member is permitted to rotate effective upon rotation of said helical shaft to force the two concentric members apart thereby closing the gaps between the threads of the helical shaft and the concentric members effectively eliminating any backlash in the apparatus.

4,279,174

SINGLE LEVER 10-SPEED BICYCLE SHIFTER

Haldon Ross, Olney, Ill., assignor to AMF Incorporated, White Plains, N.Y.

Filed Feb. 2, 1979, Ser. No. 8,908
Int. Cl.[3] B62M 9/00; F16H 7/22
U.S. Cl. 74—473 P **2 Claims**



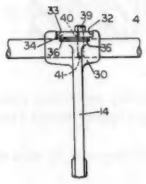
1. In a multiple-speed bicycle having a derailleur mechanism and a manually actuated control mechanism for operating said derailleur mechanism, said bicycle having a front wheel fork having an upper stem, and a handlebar stem positioned inside and clamped to said fork stem, the improvement of said manually actuated control mechanism being positioned inside said handlebar stem above said fork stem, said improvement comprising a housing formed on said handlebar stem above said fork stem, said housing being relatively flat in the fore and aft direction of said bicycle and being positioned to protrude ahead of said fork stem, a handlebar clamp formed on the front of said housing for clamping a handlebar to said handlebar stem, said manually actuated control mechanism being positioned inside said housing, and said handlebar stem, housing and clamp being integrally formed with each other as a unitary single piece member.

4,279,175

ADJUSTMENT FOR SHIFT FORK ON A SHIFT RAIL OF A TRANSMISSION

Michal A. Breed, Muskego, and George T. Prince, West Allis, both of Wis., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Nov. 2, 1979, Ser. No. 90,607
Int. Cl.[3] G05G 9/14; F16D 1/00
U.S. Cl. 74—473 R **10 Claims**



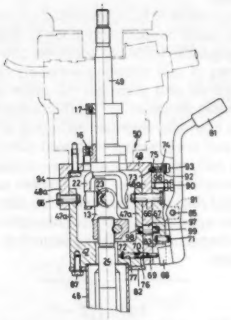
1. An adjustable device on a shift rail and shift fork of the vehicle transmission comprising, a vehicle transmission including at least one reciprocally mounted shift rail, a shift lever mounted for reciprocating said shift rail, a shift fork mounted on said shift rail adapted for shifting a clutch in at least one gear ratio in the transmission, an adjustable device adjustably positioning said shift fork on a said shift rail including a sleeve portion of said shift fork embracing said shift rail, a transverse primary slot formed in said sleeve portion of said shift rail, an axially elongated opening in said slot extending through one side of said sleeve portion, a selected one of a plurality of plates having a length approximately equal to the width of said transverse slot and having a hole a selected predetermined dimension from one end of said plate, a bolt extending through said hole of said plate in said opening in said sleeve portion of said shift fork thereby fastening the shift fork on the shift rail in a predetermined axial position.

4,279,176

LOCKING DEVICE FOR A TILT STEERING WHEEL

Fumio Minamitani, Yokohama, Japan, assignor to Isuzu Motors Ltd., Tokyo, Japan

Filed Dec. 3, 1979, Ser. No. 99,794
Claims priority, application Japan, Dec. 8, 1978, 53-150985; Jul. 3, 1979, 54-83413
Int. Cl.[3] B62D 1/18; G05G 5/06
U.S. Cl. 74—493 **6 Claims**



1. A locking device for a tilt steering wheel in which an intermediate shaft connected to a steering gear mechanism and a wheel shaft are linked together by means of a universal joint, and at said linked position, a first bracket for rotatably supporting said wheel shaft and a second bracket secured to a steering column are pivotally joined by a pair of pivot pins, said device comprising:

an adjusting plate rotatably and slidably supported on said first bracket by one of said pivot pins;

connection pin means for connecting said first and second brackets so as to prevent relative rotation therebetween;

setting storage pin means for connecting said bracket and said adjusting plate so as to prevent rotation therebetween;

an operating body means for releasing said setting storage pin means from said adjusting plate;

springs for biasing said connection pin means toward a position in which said first and second brackets are connected;

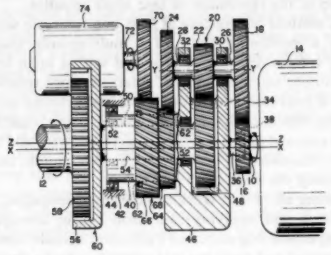
retaining means for restricting relative rotation between said adjusting plate and said first bracket; said retaining means adapted to retain said adjusting plate in a plurality of positions relative to said first bracket; and

said connection pin means and said setting storage pin means being arranged for sequential axial registration in each of said relative positions and whereby said connection pin means are released from the force of said springs by axial motion of said operating body means in said positions in which said operating body means, said setting storage pin means and said connection pin means are in axial registration.

4,279,177
VARIABLE SPEED TRANSMISSION

Masaaki Yamashita, 3-18 4-chome, Inabaso, Amagasaki-shi, Hyogo-ken, Japan

Filed Apr. 18, 1979, Ser. No. 31,166
Claims priority, application Japan, Apr. 18, 1978, 53/046368
Int. Cl.³ F16H *37/06*
U.S. Cl. 74—675 **6 Claims**



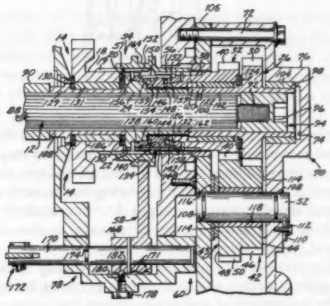
1. A variable speed transmission comprising:
(a) an input shaft rotatable about a first axis;
(b) an output shaft in axial alignment with the input shaft;
(c) an internal gear assembly comprising an internal gear and a pinion in mesh therewith, the internal gear assembly being connected to either of the input shaft and the output shaft, with the internal gear connected on the input side and the pinion on the output side; the internal diameter of the internal gear being somewhat larger than the external diameter of the pinion;
(d) a first sun gear fixedly and coaxially mounted on the other of the input shaft and the output shaft;
(e) a planet gear set in mesh with the first sun gear;
(f) a planet carrier rotatably carrying the planet gear set and adapted for rotation about the first axis;
(g) an eccentric shaft connected at one end to the internal gear assembly and rotatably supported by the planet carrier for rotation about a second axis which is offset from and parallel to the first axis and which is subject to angular displacement about the first axis, the eccentric shaft being further revolvable with the planet carrier about the first axis;
(h) a second sun gear fixedly and coaxially mounted on the other end of the eccentric shaft and meshing with the planet gear set; and
(i) means interposed between the input shaft and the output shaft for continuously varying their speed ratio.

4,279,178
OVERDRIVE GEAR ARRANGEMENT

William Todd, Duarte, Calif., assignor to Todd Overdrive Company, Marine Del Rey, Calif.

Filed Jun. 27, 1979, Ser. No. 52,495
Int. Cl.³ F16H *3/02, 3/08*
U.S. Cl. 74—745 **9 Claims**

1. In an automotive drive line power transfer case for a four-wheel drive vehicle including a splined main drive shaft coupled to and driven from a vehicle transmission coupled to transmit power to four wheels of the vehicle, an overdrive adapter gear arrangement comprising:
a bearing having an interiorally splined bearing support and having a smooth outer surface positioned on said main drive shaft proximate to the coupling of said main drive shaft to said vehicle transmission,
a main drive gear journaled for rotation upon said bearing and having an externally toothed section coupled to drive said four wheels and an externally splined hub section extending axially and rearwardly, relative to said vehicle transmission,
a direct drive gear internally splined to said main drive shaft for rotation therewith and longitudinally displaced rearwardly from said axially extending hub section of said main drive gear and having external splines thereon,
an overdrive driving gear internally splined to said main drive shaft for rotation therewith and longitudinally displaced rearwardly from said direct drive gear and from said axially extended hub section of said main drive gear and including a forward sleeve with a smooth outer surface, a section with externally directed idler engaging teeth thereon located rearwardly of said forward sleeve, and a rearward sleeve located rearwardly from said section with externally directed idler engaging teeth and remote from said main drive gear supported upon said main drive shaft,
an encircling bearing disposed about said rearward sleeve of said overdrive driving gear,
bearing means disposed about said forward sleeve of said overdrive driving gear,
an overdrive driven gear having externally directed idler engaging teeth thereon and journaled for rotation upon



said bearing means for rotation about said main drive shaft and longitudinally displaced rearwardly from said direct drive gear and from said axially extended hub section of said main drive gear and displaced forwardly from said idler engaging teeth of said overdrive driving gear,
idler gear means disposed upon an idler shaft mounted in said transfer case parallel to said main drive shaft and having a forwardly located toothed section meshed with said idler engaging teeth of said overdrive driven gear and a rearwardly located toothed section meshed with said idler engaging teeth of said overdrive driving gear for providing a mechanical speed advantage from said overdrive driving gear to said overdrive driven gear, and
an internally splined shift collar means disposed about said main drive shaft in continuous splined engagement with said external splines of said hub section of said main drive gear and longitudinally reciprocal rearwardly for engagement with said overdrive driven gear and longitudinally reciprocal forwardly for alternative engagement with said direct drive gear.

4,279,179
IGNITION SYSTEM CONTROL

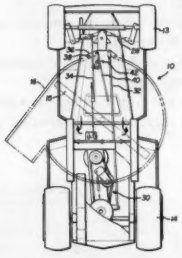
John H. Marto, Oshkosh, Wis., assignor to J. I. Case Company, Racine, Wis.

Filed Aug. 23, 1979, Ser. No. 69,160
Int. Cl.³ B60K *41/02*; A01D *75/28*
U.S. Cl. 74—850 **1 Claim**

1. An ignition system control for a garden tractor which includes a chassis, a mower drive control linkage, and a transmission drive control linkage, said ignition system contol comprising:
a control switch actuator mounted to said chassis between

said drive control linkages, each of said drive control linkages being independently movable between engaged and disengaged positions, and said control switch actuator being connected to the electrical starting circuit of said tractor, and said control switch actuator including contact means;

a control member connected between said drive control linkages in a transverse bridge-like fashion above said contact means and the opposite ends of said control member being movable in response to the movement of either drive control linkage, means for mounting one end of said control member to an actuator means for both free rotative and vertical movement, said actuator means connected to one of said drive control linkages for longitudinal movement along the tractor chassis in response to the movement of said one drive control linkage, and the other end of said control member being mounted to the other of said drive control linkages for longitudinal movement along the tractor chassis in response to the movement of said other drive control linkage; and



said control switch actuator being normally open to prevent engine starting and said switch actuator being closed by the movement of said drive control linkages to their disengaged position thereby causing said control member to engage said contact means and close said control switch actuator permitting engine starting.

4,279,180

MULTI-SPINDLE LATHES

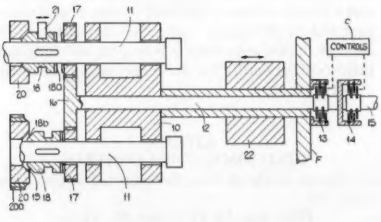
Geoffrey E. S. Tomlinson, Solihull, and Roy S. Dolman, Polesworth, Nr. Tamworth, both of England, assignors to White-BSA Tools Ltd., Birmingham, England

Filed May 22, 1979, Ser. No. 41,518

Claims priority, application United Kingdom, May 24, 1978, 22135/78

Int. Cl.³ B23B *3/00, 3/34, 19/02*

U.S. Cl. 82—1 C **10 Claims**



1. A multi-spindle machine tool comprising a frame, a spindle carrier mounted on said frame for indexing movement relative thereto, a plurality of work spindles rotatably carried by said spindle carrier, a main drive shaft from which said work spindles are driven, a main clutch and a main brake provided for said main drive shaft, a brake device provided for each said work spindle, a dog clutch for each said work spindle which can be actuated to place said work spindle into and out of driving engagement with said main drive shaft, and a control operative during a machining cycle of said machine tool to disengage said main clutch and apply said main brake thereby to arrest rotation of all said work spindles, subsequently to disengage said dog clutch and apply said brake device for each of at least one of said work spindles, and finally to release said main brake and engage said main clutch thereby to re-start rotation of the remainder of said work spindles.

9. A method of arresting at least one rotatable work spindle during a machining cycle of a multi-spindle machine tool having a main drive shaft provided with a main brake and a main clutch, and a plurality of rotatable work spindles each of which is provided with a respective brake device and a respective dog clutch, each said work spindle being capable of being placed into and out of driving engagement with said main drive shaft by actuation of said respective dog clutch, said method comprising the steps of:

arresting all of said work spindles by disengaging said main clutch and applying said main brake; disengaging said respective dog clutch of each work spindle which is to be arrested and applying said respective brake device to hold that work spindle against rotation; and re-starting rotation of the remaining work spindles by releasing said main brake and engaging said main clutch.

4,279,181

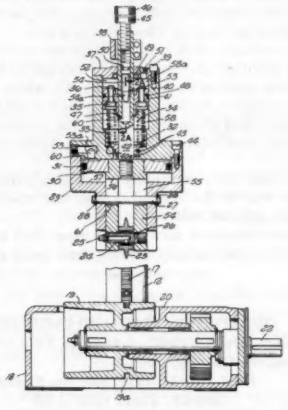
TOOL CONTROL HEAD FOR PIPE AND TUBING CUTTING MACHINE

Orville J. Birkestrand, 129A Casuda Canyon Dr., Monterrey Park, Calif. 91754

Filed May 29, 1979, Ser. No. 42,761

Int. Cl.³ B23B *21/00, 5/14*

U.S. Cl. 82—21 A **8 Claims**



1. A machine tool device for advancing a tool against a work specimen, comprising:

first means including a first piston within a housing and an output shaft connected to move with said first piston, said first piston being advanced in response to application of air under pressure to a first surface of said first piston;

a free turning tool on said output shaft;

a closed hydraulic circuit within said housing including a second piston and first and second chambers, one on each side of said second piston, said second piston being operatively connected to said first piston such that the volume of said first chamber decreases as said first piston is advanced;

second means comprising at least one check valve and a

corresponding associated first passage for controlled transfer of hydraulic fluid between said first and second chambers, said check valve having an inertial characteristic such as to close said first passage in response to hydraulic pressure against said check valve as said first chamber volume decreases, said closure being at a time corresponding to a first predetermined point of said tool advancement as permitted by said check valve inertial characteristic;

third means comprising a by-pass passage and variable flow valve between said first and second chambers, said by-pass permitting hydraulic flow between said first and second chambers at a reduced rate compared to the flow through said check valve prior to its closure, said reduced flow rate permitting continued advancement of said tool from said first predetermined point to a second predetermined point at a reduced velocity; and

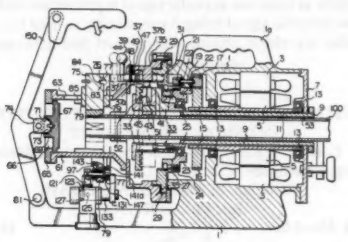
resilient fourth means for restoring said first piston and therefore said tool to a withdrawal point when said air pressure is released, said check valve contemporaneously opening to permit relatively rapid back flow of said hydraulic fluid from said second to said first chamber.

4,279,182

MACHINE TOOL

Fumiko Miyagawa; Yoshiharu Ikenaka, and Makoto Sakaguchi, all of Osaka, Japan, assignors to Rex Industries Co., Ltd., Osaka, Japan

Filed Nov. 8, 1979, Ser. No. 92,581
Claims priority, application Japan, Dec. 1, 1978, 53-147758
Int. Cl.³ B23B *19/02, 3/22*
U.S. Cl. 82—28 R **9 Claims**



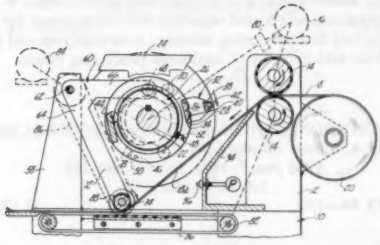
1. A machine tool for machining a blank, such as a solid or hollow round bar, comprising an electric motor which includes a motor housing having an axial bore through which said blank can extend, an annular stator arranged in said motor housing, and an annular rotor arranged in and coaxially to said annular stator, a chucking device for clamping said blank which extends through said axial bore and said annular rotor, and at least one cutting tool for machining the blank, one of said chucking device and said at least one cutting tool being mechanically immovably connected to said motor housing and the other being mechanically and rotatably connected to said annular rotor; and a hollow outer cylinder which is coaxially connected to said annular rotor so as to rotate together therewith and a hollow inner cylinder which is immovably connected to said motor housing and which is arranged in and coaxially to said outer cylinder, said chucking device being connected to said inner cylinder, said at least one cutting tool being mechanically connected to said rotatable outer cylinder so as to rotate together therewith.

4,279,183

ROTARY HEAT CUTTER FOR PLASTIC WEBS

Arthur E. LaFleur, Manistee, Mich., assignor to Custom Packaging Systems, Manistee, Mich.

Filed Oct. 26, 1979, Ser. No. 88,372
Int. Cl.³ B26F *3/08;* **B26D** *7/14*
U.S. Cl. 83—16 **27 Claims**



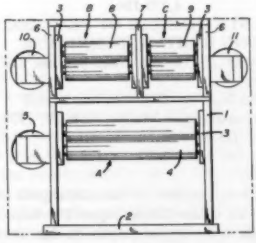
21. The method of severing a continuous plastic web transversely into a plurality of successive sheets comprising feeding web at a substantially uniform lineal speed continuously in one direction between vertically and laterally spaced upstream and downstream points, there being web tensioning means at the downstream point so as to maintain the section of the web moving between said points in a straight, downwardly inclined, taut condition, rotating a heating element continuously in one direction about an axis parallel to and extending transversely of said straight section of the web, the heating element being adapted to sever the straight section of the web transversely when engaged therewith and being spaced from its axis of rotation a distance at least slightly greater than the radial spacing between said axis and said straight section of the web, causing the heating element to rotate into engagement with the straight section of the web while the web is moving at said speed so as to deflect it radially outwardly and thereby sever the web along a transverse line so that the portion of the web downstream of the line of severing forms a discrete sheet, thereafter advancing in a downwardly direction the leading end portion of the web upstream of said line of severing to said web tensioning means to again place a section of the web between said two points in said taut condition before the heating element again rotates into engagement with the web.

4,279,184

APPARATUS FOR PROCESSING LONGITUDINALLY-MOVING WEBS OF MATERIAL

Cees J. Smolders, Haarlem, Netherlands, assignor to Universal Corrugated Box Machinery Holding AG, Zug, Switzerland

Filed Oct. 10, 1979, Ser. No. 83,725
Int. Cl.³ B26D *1/56*
U.S. Cl. 83—302 **9 Claims**



1. Apparatus for processing a longitudinally-moving web of material of predetermined width as well as a plurality of webs

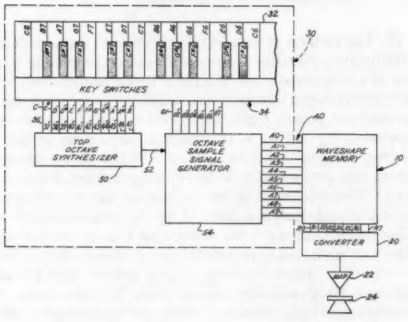
of shorter width produced by longitudinally slitting said original web of predetermined width, the apparatus comprising a first processing means having a processing width corresponding to said predetermined width and through which said original web can pass, a plurality of additional processing means located at a different vertical position with respect to said first processing means and having individual processing widths smaller than said predetermined width, said plurality of processing means spanning a distance substantially equal to said predetermined width, and superimposed frame means for supporting said first processing means at a vertically-spaced position from said plurality of additional processing means.

4,279,185

ELECTRONIC MUSIC SAMPLING TECHNIQUES

Sydney A. Alonso, Strafford, Vt. 05072

Filed Jun. 7, 1977, Ser. No. 804,363
Int. Cl.³ G10H *1/00*
U.S. Cl. 84—1.01 **13 Claims**



1. Apparatus for generating a tone signal suitable for conversion to a corresponding audible musical note having a fundamental frequency and a predetermined waveshape, comprising:

waveshape means for storing a binary digital representation of the waveshape, said waveshape being periodic, an entire period of the waveshape being represented by 2π radians, the amplitude of the waveshape being digitally represented at each of a plurality of 2^K phase angles, each phase angle being at $(2\pi X)/2K$, where X is all integers between 0 and 2^K-1 and where K is an integer;

means for sampling the waveshape only at a rate equal to 2^N times the fundamental frequency of the musical note, where N is an integer; and

means for converting the results of the sampling into a tone signal having the fundamental frequency, whereby distortion of a resulting musical note is reduced.

4,279,186

POLYPHONIC SYNTHESIZER OF PERIODIC SIGNALS USING DIGITAL TECHNIQUES

Christian J. Deforeit, 202 rue des Joncs-Marins, 91620 La Ville du Bois, France

Filed Nov. 8, 1979, Ser. No. 92,468
Claims priority, application France, Nov. 21, 1978, 78 32727; Mar. 23, 1979, 79 07339
Int. Cl.³ G10H *1/00, 3/03*
U.S. Cl. 84—1.01 **15 Claims**

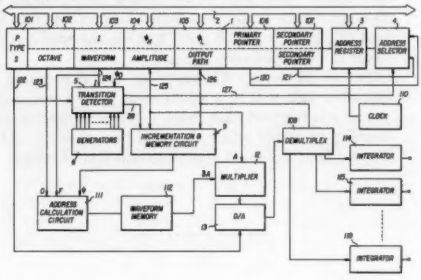
1. A polyphonic synthesizer of periodic signals comprising:

sample production means having inputs for receiving at least a digital phase and a digital amplitude data from a source of digital phase and digital amplitude data and an output for producing a corresponding digital sample value of a predetermined waveform;

means for digital-to-analog conversion of each digital sample value produced by the sample production means;

a given number of generators for producing rectangular waveform signals of different frequencies, each periodic signal produced by said synthesizer being harmonically related to a rectangular waveform produced by one of said generators;

memory means, said memory means including a plurality of addressable groups of memory blocks, each group including a plurality of memory blocks, each group containing at least a digital data representing the instantaneous phase ψ of a periodic signal to be produced, a digital data representing the amplitude A of said periodic signal, digital addressing data representing the address of another group, and a digital data I for selecting one of the generators; and



controlling means for sequentially reading the memory groups in response to the addressing data of each group, for selecting a generator signal with the respective selecting data I read in each group, and for applying the phase and amplitude data to the sample production means in substantial synchronization with the selected generator signal;

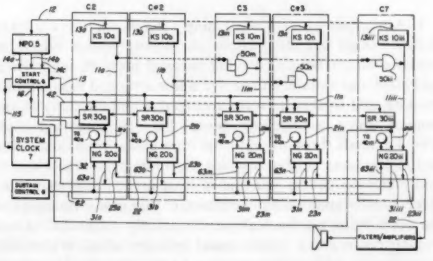
whereby at least one periodic signal is produced, said at least one periodic signal being harmonically related to a rectangular waveform produced by one of said generators.

4,279,187

DIGITAL ARPEGGIO SYSTEM FOR ELECTRONIC MUSICAL INSTRUMENT

Joseph L. Kappes, Cincinnati, Ohio, assignor to Baldwin Piano & Organ Company, Cincinnati, Ohio

Filed Jan. 9, 1980, Ser. No. 110,619
Int. Cl.³ G10F *1/00*
U.S. Cl. 84—1.03 **16 Claims**



1. In an electronic musical instrument, including tone generating means, a plurality of note selecting switches corresponding to notes of a musical scale, and an acoustic output system, an improved system for sounding notes comprising:

a note pattern producing means comprising a plurality of serially connected shift registers, there being a shift regis-

ter for each of said note selecting switches, which sequentially passes tone signals to the acoustic output system in response to the actuation of at least one of the note selection switches; and

release sustain means for controlling the length of time a tone signal will continue to be passed to the acoustic output system after a note selection switch is deactivated.

4,279,188

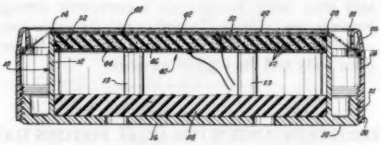
ACOUSTIC COUPLING FREE ELECTRIC DRUM

Robert D. Scott, 1324 Glen Alan, West Covina, Calif. 91791

Filed Sep. 21, 1979, Ser. No. 77,597

Int. Cl.³ G10H *3/06;* **H01C** *10/10*

U.S. Cl. 84—1.14 **33 Claims**



1. In combination a drum having a drum head and a variable resistance electromechanical transducer substantially contiguous with said head and comprising first and second conductive members is surface contact with and spaced by a carbon impregnated resilient, dielectric, synthetic organic polymer matrix defining a drum head hit pressure responsive, variable resistance medium between said members in acoustic coupling free relation.

4,279,189

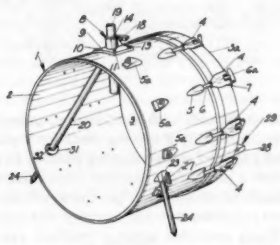
BASS DRUM SPUR AND STABILIZER ASSEMBLY

Lawrence J. Kelly, Covington, Ky., assignor to Baldwin Piano & Organ Company, Cincinnati, Ohio

Filed Feb. 29, 1980, Ser. No. 125,937

Int. Cl.³ G10D *13/02*

U.S. Cl. 84—421 **7 Claims**



1. A spur and stabilizer assembly for a bass drum having a cylindrical drum shell with its axis horizontally oriented, said assembly comprising a pair of hollow tubular stabilizer elements having upper and lower ends, said upper ends of said stabilizer elements being operatively affixed substantially adjacent each other to the upper portion of said shell, said tubular stabilizer elements extending downwardly and forwardly and diverging laterally with respect to and within said shell, a pair of spur brackets, each of said spur brackets being affixed to the outside surface of said shell and having a portion extending through a perforation in said shell, said lower end of each of said tubular stabilizing elements being open and being operatively connected to the adjacent one of said spur brackets, a pair of elongated, rod-like spurs, each of said spur brackets having a bore therethrough coaxial with the hollow interior of the connected one of said stabilizer elements, each spur being telescopically received in one of said spur bracket bores and the hollow interior of the connected one of said stabilizer elements, and a clamping means in association with each of said spur brackets to lock the respective one of said spurs therein in axially adjusted position.

4,279,190

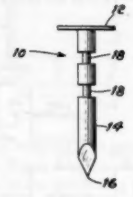
BREAK AWAY NAIL

Philip H. Hummel, 28 Pawnee Ave., Oakland, N.J. 07436

Filed Jul. 5, 1979, Ser. No. 54,999

Int. Cl.³ F16B *15/00, 15/08*

U.S. Cl. 411—487 **2 Claims**



1. A nail comprising a single head and a shank of predetermined length terminating at a first end in said head for use in driving said nail into place and a second end opposite said first end, at least a first reduced portion along said shank constructed so that said nail fractures in response to a lateral force of predetermined strength, wherein said reduced portion comprises a completely open peripheral channel shaped groove having side walls extending outwardly from the longitudinal axis of the nail shank and disposed at right angles to the longitudinal axis of said nail shank.

4,279,191

FIREARMS

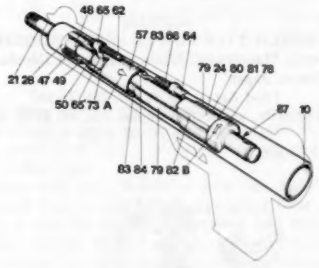
Carl B. Johansson, Arlöv, Sweden, assignor to Aimpoint AB, Malmo, Sweden

Filed Oct. 12, 1979, Ser. No. 84,276

Claims priority, application Sweden, Apr. 11, 1979, 7903210

Int. Cl.³ F41D *3/06*

U.S. Cl. 89—185 **10 Claims**



1. A firearm comprising a barrel, a bolt at one end of the barrel, means on the bolt mounting the bolt for axial displacement on the outside of the barrel to and from a firing position and for rotational movement on the barrel, spring means biasing the bolt towards the firing position, a carrier non-rotatably guided for axial displacement on the outside of the barrel, said spring means biasing said carrier to a forward position, means operatively connecting said means mounting the bolt to said carrier for axial displacement of the bolt by the carrier, and at least one locking element on the outside of the barrel for cooperation with said bolt in the firing position thereof, said connecting means guiding the bolt for rotation by axial displacement of the carrier to engage the bolt with the locking element

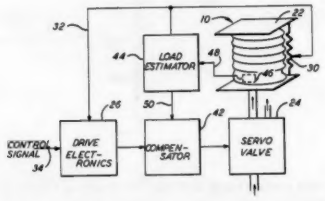
after axial displacement to the firing position and to disengage the bolt from the locking element before axial displacement of the bolt from the firing position.

4,279,192

ELECTRONIC COMPENSATOR FOR A PNEUMATIC SERVO CONTROLLED LOAD BEARING BELLOWS SYSTEM

Jeffrey M. Kleinwaks, Binghamton, N.Y., assignor to The Singer Company, Binghamton, N.Y.

Filed Aug. 24, 1979, Ser. No. 69,465
Int. Cl.³ F15B *13/16, 11/10*
U.S. Cl. 91—361 **5 Claims**



1. In a bellows-type actuator system having a load moving surface, a bellows associated with said surface, a servo valve for supplying gas to said bellows in response to a drive signal applied thereto, position sensing means associated with said surface for sensing the relative position of said surface and providing a position signal representative thereof, control means for supplying a control signal representative of a desired surface position, a drive circuit including comparing means for comparing said control signal and said position signal and producing a resultant drive signal proportional to their difference, and said drive circuit also including amplifier means for amplifying said drive signal by a predetermined gain factor for driving said servo valve, an improvement comprising:

(a) monitor means for determining the load on said surface and providing a load signal representative thereof; and

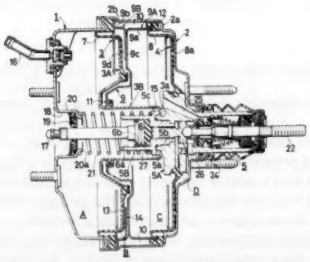
(b) compensation means responsive to said load signal for compensating said system so as to cancel a load-variable system characteristic which cause system instabilities.

4,279,193

TANDEM TYPE POWER SERVO BOOSTER

Satoru Satoh, Matsuyama, Japan, assignor to Jidosha Kiki Co., Ltd., Tokyo, Japan

Filed Apr. 4, 1979, Ser. No. 26,967
Claims priority, application Japan, Jul. 18, 1978, 53-87253
Int. Cl.³ F01B *19/00;* **F15B** *9/10*
U.S. Cl. 91—376 R **9 Claims**



1. In a tandem type power servo booster including a housing defined by front and rear shells, a rear power piston secured to a valve body, a cylindrical member extending from the valve body, a front power piston secured to the cylindrical member, and a push rod having a rear end inserted into the cylindrical member and slidingly contacted with the valve body, and a front end projecting outside the housing through a recessed portion formed in the front shell, said recess accommodating a sealing member to seal said front end of said push rod, the improvement comprising:

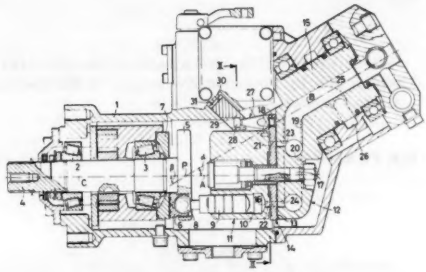
the front power piston and the cylindrical member being formed of sheet metal, and an inner diameter of the cylindrical member being larger than an outer diameter of the recessed portion, to insert the recessed portion into the cylindrical member; and wherein the valve body comprises a main body and a support member threadingly engaged and in alignment therewith, a rear end portion of the cylindrical member engaging a projection provided on said main body to maintain a concentric arrangement between the cylindrical member and the valve body, said cylindrical member being fixedly supported between the main body and the support member.

4,279,194

HYDROSTATIC UNIT WITH AXIAL PISTONS HAVING A VARIABLE STROKE VOLUME

Mario Brighigna, Ferrara, Italy, assignor to Stabilimenti Meccanici VM S.p.A., Italy

Filed May 8, 1979, Ser. No. 37,086
Claims priority, application Italy, Nov. 30, 1978, 30360
Int. Cl.³ F016 *13/02*
U.S. Cl. 91—483 **2 Claims**



1. A hydrostatic unit with axial pistons, comprising a drive shaft carrying integrally a driving plate for a plurality of circumferentially spaced apart pumping pistons, a cylinder block equipped with a plurality of parallel circumferentially spaced apart cylinders in which such pumping pistons are slidably engaged, and a distributor body carrying said cylinder block in a manner freely rotatable about a medium axis thereof and equipped additionally with a couple of distribution ports for a hydraulic fluid, said ports being capable of communicating alternately with respective intake and outlet ports of said cylinders, said distributor body being rotatable on command about an axis inclined relative to the axis of the drive shaft and carrying said cylinder block so that the axis of rotation of the latter passes through the point of intersection between said axis of the distributor body and of the drive shaft and is inclined in its turn relative to said axis of the distributor, a phase-adjusting plate inserted between the cylinder block and the corresponding surface of the distributor body said plate having formed therethrough ports identical to those of the distributor body and communicating therewith, said phase-adjusting plate being rotatable about the axis of the cylinder block, means being provided responsive to each rotation of the distributor body about its own axis by a simultaneous and opposite rotation of the phase-adjusting plate about the axis of the cylinder block through such an angle as to keep the dead centers of the pistons constantly centered relative to said ports of the phase-adjusting

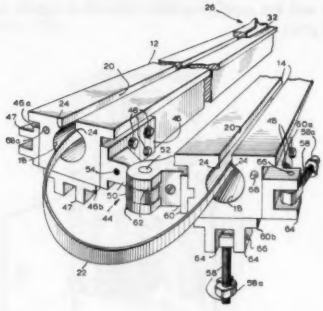
plate and so as to allow for the shift of the dead centers relative to the distribution ports, said means being formed by a pivot rigidly affixed to said phase-adjusting plate and connected for rotation and sliding to the fixed casing of the hydrostatic unit.

4,279,195

COLLAPSIBLE LAUNCHING SYSTEM

Matthew N. Miller, Woodland Hills, Calif., assignor to Fairchild Industries, Inc., Germantown, Md.

Filed Dec. 22, 1978, Ser. No. 972,275
Int. Cl.³ F01B *29/00*
U.S. Cl. 92—88 **7 Claims**



1. A fluid pressure actuated launching system comprising in combination, a plurality of cylinder members, each of said cylinder members having an opening extending longitudinally therewithin and a longitudinal slot communicating with said opening, hinge means situated between said cylinder members and connecting each cylinder member with an adjacent cylinder member such that the longitudinal slot in each cylinder member is positionable thereby to form a substantially continuous longitudinal slot and opening therewithin when said cylinder members are contiguous, tensioned closure means for sealing portions of said longitudinal slot, means connected to said closure means and one of said cylinder members for relieving the tension on said closure means, means for disconnecting said closure means from said means for relieving the tension on said closure means, and a linearly movable piston assembly having a portion thereof in contact with said closure means and linearly movable during ejection and return strokes, an interior portion of said piston assembly being movably disposed within the opening in the cylinder members and having an exterior portion integral with said interior portion and adapted to engage an article to be launched from said launching system .

4,279,196

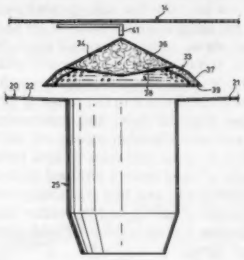
PAINT SPRAY BOOTH WITH SILENCER MEANS

Ivan Bloomer, London, England, assignor to Carrier Drysys Limited, London, England

Filed Jan. 11, 1980, Ser. No. 111,157
Int. Cl.³ B05C *15/00*
U.S. Cl. 98—115 SB **13 Claims**

9. In a paint spray booth of the type comprising a work area having sidewalls and a perforate floor, a sub-floor beneath and spaced from the perforate floor, means for flooding the sub-floor with a paint removing liquid such as water, at least one constricted passage through the sub-floor having at least one downwardly extending surface to define a scrubber in which overspray from the work area is intermixed with and transferred substantially to the liquid, and air moving means to cause a substantial flow of air from the work area to and through the constricted passage, the improvement which comprises:

means forming a sound absorbing chamber externally adjacent and substantially coextensive with said downwardly extending surface, sound absorbent material within said sound absorbing chamber, perforations in and through said surface to permit sound in said constricted passage to



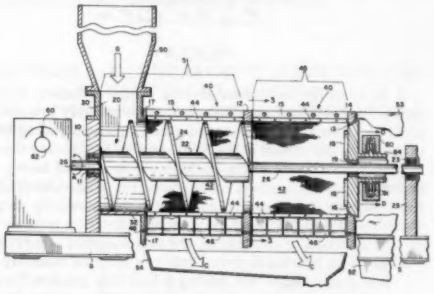
be absorbed by said material, and water impervious means between said surface and said sound absorbing material to prevent said liquid from contacting said sound absorbing material.

4,279,197

SCREW PRESS WITH POSITIVE FEED AND ACCESSIBLE SCREENS

Arthur J. Hunt, and Arthur J. Hunt, Jr., both of 332 N. Halifax Dr., Ormond Beach, Fla. 32704

Filed Oct. 17, 1979, Ser. No. 85,890
Int. Cl.³ B30B *9/12*
U.S. Cl. 100—117 **3 Claims**



1. A positive-feed screw press having easily replaceable and cleanable screens for extracting remaining available juice from predrained grape must, said press having an inlet end and an outlet end, comprising:

a cylindrical cage formed from at least one pair of semi-cylindrical frames, said frames supporting filter screens serving to pass the extracted juice from said must therethrough, said pair of semi-cylindrical frames attached to offset hinges disposed along the lower edges thereof and said frames removably attached to each other along the upper edges thereof whereby said cylindrical cage may be opened for cleaning of said screens or replacement of said screens;

a rotatable feed and compression screw having a cylindrical body and a screw thread disposed helically around the surface of said body, said feed screw disposed concentrically in a portion of said cylindrical cage adjacent said inlet end, said screw thread having an outside diameter essentially equal to the inside diameter of said cage, said cylindrical cage having a portion rearward from said feed and compression screw threads forming a pressing chamber wherein said must is pressed against said filter screens for extraction of juice from said must; and

inlet chamber means disposed at said inlet end of said press, said chamber means having a cylindrical barrel concentric with and communicating with said cage, said barrel having a top opening above said feed screw and a totally enclosed portion between said opening and said cage and in which the longitudinal dimension for said opening does not exceed about one and one half times the pitch of said feed screw, and in which the portion of said barrel directly below said opening encloses said screw thread for a portion of its circumference in the range of 50% to 75%; and

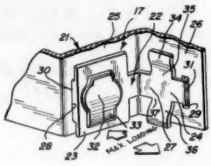
hopper means disposed above and communicating with said opening, said inlet chamber means and said hopper means cooperating to cause said must to feed initially by gravity from a head of must therein into said feed screw until said must is carried into and fills said totally enclosed portion of said cylindrical barrel, and thereafter to be fed by gravity and suction for movement of said must through said cylindrical barrel.

4,279,198

REFUSE COMPACTOR SLIDE BEARING

Milton J. Johnson, Stanford, KY, assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Nov. 26, 1979, Ser. No. 97,737
Int. Cl.³ B30B *15/04*
U.S. Cl. 100—229 A **20 Claims**



1. In a refuse compactor having a ram assembly, moving means for moving the ram assembly alternatively toward and from a compacting position, and guide means extending in the direction of movement of the ram assembly for guiding the ram assembly, said guide means including a first guide facing in a first direction transversely to said direction of movement of the ram assembly and a second guide facing substantially perpendicularly to said first guide in a second direction transversely to said direction of movement, the improvement comprising

a one-piece bearing disposed between said ram assembly and said guide means and having a first base portion fixed to said ram assembly and a first slide portion carried by said first base portion for slidably engaging said first guide, and a second base portion fixed to said ram assembly and a second slide portion carried by said second base portion for slidably engaging said second guide, at least one of said slide portions being resiliently carried by a base portion.

4,279,199

PRINT HEAD IMAGE GENERATOR FOR PRINTER SUBSYSTEM

Abelardo D. Blanco, Miami; William W. Boynton, Bronson, and Charles J. Weber, Boca Raton, all of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 19, 1979, Ser. No. 86,492
Int. Cl.³ B41J *3/12*
U.S. Cl. 101—93.05 **9 Claims**

8. A data conversion arrangement for a printer,, comprising:

a source of data representative of character information to be printed, said data being arranged in character codes representative of a selected dot matrix format;

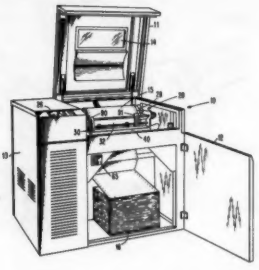
a printer unit, said printer unit incorporating print means to print characters on a document at a print line during printing operations;

print drive means for moving said print means along a print line to print characters on said document during printing operations;

a print head image generator associated with said printer unit, said image generator being operable concurrently with driving movement of said print means along said print line to convert said data to a wire image pattern in said printer unit, said image generator utilizing image slices of said data and a masking technique to develop the wire image pattern;

printer control means for supplying said converted signals to operate said print means furing printing operations;

a microprocessor unit incorporated in said printer control means for controlling operations of said head image generator and for supplying said converted signals to operate said print wires;



storage means comprising at least one text buffer for storing information pertaining to characters provided by said source to be printed by said printer unit and said storage means further comprising means for storing wire images for use by said head image generator to develop wire image patterns; and

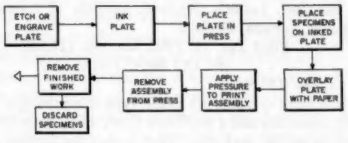
selection means controlled by said microprocessor unit and operable on an interleaved cyclical basis during actual printing of information to enable said source to access said storage means during source access cycles to store character information therein and to concurrently enable said head image generator to access said wire images and said character information in said storage means during head image generator access cycles for conversion of said information.

4,279,200

METHOD FOR PRODUCING NATURE PRINTS

Rosemarie Newcomb, 2227 Seely Dr., Orlando, Fla. 32808

Filed Dec. 26, 1979, Ser. No. 106,758
Int. Cl.³ B41M *1/10*
U.S. Cl. 101—170 **6 Claims**



1. A process for producing a unique work of art comprising the steps of:

(1) preparing a printing plate with a background design;

(2) inking the printing plate;

(3) disposing specimens from nature on the inked surface of the plate;

(4) overlaying the plate and natural specimens with a material to be printed; and

(5) applying pressure to plate and materials to cause inked

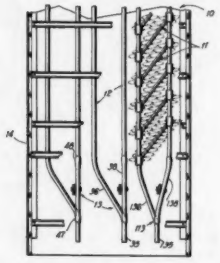
areas of the plate to offset to the surface of the material except where blocked by the natural specimens thereby producing a negative uninked outline of such specimens and to cause natural coloring within the natural specimens to be expressed therefrom and to leach into the surface of the material within such outline for providing color thereto.

4,279,201

GARMENT RACK SYSTEM

Archie Solomon, P.O. Box 395, Roswell, Ga. 30077

Filed May 29, 1979, Ser. No. 43,427
Int. Cl.[3] E01B 25/26
U.S. Cl. 104—100 7 Claims



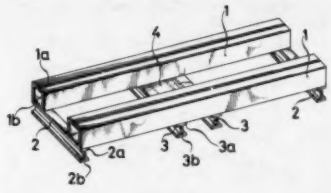
1. An article carrying system, comprising:
(a) a trolley for suspending a plurality of articles therefrom;
(b) a pair of spaced, horizontal rails, said trolley being moveable on said rails;
(c) means for mounting said rails from an ancillary structure; and
(d) means for automatically supporting said trolley on a diagonal to the longitudinal axes of said rails, wherein said trolley includes a pair of rollers, each roller capable of being in rolling engagement with one of the rails of said pair of rails, the distance between said rollers being greater than the distance between said rails, said trolley further including a horizontal rod with opposed ends, and a hook extending upwardly adjacent each of said ends, said hook having a lower end rotably supported on said rod and having a distal end, with said rollers being rotably mounted on said distal ends, and wherein said supporting means includes said rails having main portions which are in parallel, spaced relationship, said main portions terminating in front ends, a first of said rails further including an articulated member integrally connected to and projecting outwardly from the front end of said first rail and having a forward rail section which extends beyond the termination of the main portion of said second rail, the longitudinal axes of said forward rail section and said main portions of said rails being parallel and further having a section interconnecting said forward rail section and said main portion of said first rail, further including means for linking said articulated member with said main portion of the second of said rails, wherein said linking means includes a front end capable of a first position of releasable, mating engagement with said forward rail section of said member and a rear end capable of a second position of releasable, mating engagement with said main portion of said second rail and means for alternately moving said ends into and out of said first and second portions, said linking member being mounted for pivotal movement about a horizontal axis and wherein said moving means includes a weight selectively positioned on said linking member so that said linking member is counter-balanced about said horizontal axis.

4,279,202

TORSIONALLY FLEXIBLE RAILWAY TRUCK FRAME

Hans Dieling, Felsberg-Rhünda, and Manfred Schindehütte, Calden, both of Fed. Rep. of Germany, assignors to Wegmann & Co., Fed. Rep. of Germany

Filed Jun. 15, 1979, Ser. No. 48,866
Claims priority, application Fed. Rep. of Germany, Jun. 15, 1978, 2826155
Int. Cl.[3] B61F 5/00, 5/24, 5/52
U.S. Cl. 105—206 R 12 Claims



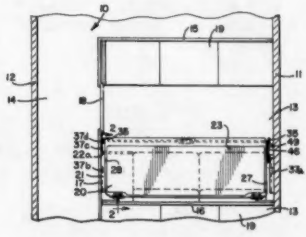
1. A swivel truck frame of high torsional flexibility for rail vehicles comprising a pair of straight longitudinal box beams having longitudinal slotted tops running parallel to one another, said longitudinal beams connected to one another by parallel running crossbeams to define a rectangular frame, said crossbeams being welded to said longitudinal beams, said crossbeams being disposed under said longitudinal beams, the lower chords of said longitudinal beams being welded to the upper chords of said crossbeams, said longitudinal beams being further interconnected by at least one middle crossbeam disposed between said parallel running crossbeams.

4,279,203

PASSENGER CAR COMPARTMENT UPPER SLEEPING BERTH SUPPORT ASSEMBLY

Walter J. Marulic, Gary, Ind., assignor to Pullman Incorporated, Chicago, Ill.

Filed Oct. 15, 1979, Ser. No. 84,488
Int. Cl.[3] A17C 17/38; B61D 1/02, 31/00
U.S. Cl. 105—321 14 Claims



1. In a railway passenger car compartment having an outer car side wall, a longitudinally extending divider wall spaced from the side wall, a partition wall extending laterally between the side wall and the divider wall and laterally extending seats positioned adjacent the partition wall, the improvement comprising an upper sleeping berth arrangement having
a berth frame defining the sleeping berth, the berth frame having front and rear side frame members and end frame members connected to the side frame members,
hinge means connecting the rear side frame member to the partition wall and for swinging the berth frame between a relatively vertical storage position adjacent to the partition wall and a relatively horizontal sleeping position outwardly of the partition wall,

guide means including a slidable support link for slidingly supporting the berth frame to the outer car side wall during movement of the berth frame from each position,

latch means disposed on the berth frame for releasably locking the berth frame on the outer car side wall and divider wall, and

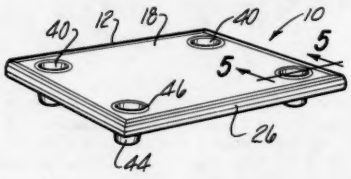
a support ledge extending above the seats for supporting the berth frame in the sleeping position.

4,279,204

LIGHTWEIGHT STACKABLE PALLET

Robert L. Propst, Bellvue, Wash., assignor to Herman Miller, Inc., Zeeland, Mich.

Filed Oct. 1, 1979, Ser. No. 80,303
Int. Cl.³ B65D *19/26*
U.S. Cl. 108—53.3 **1 Claim**



1. A lightweight pallet comprising a substantially horizontally disposed, generally rectangular body member having a core portion, said core being formed to include a plurality of hollow multi-sided columns collectively constituting a honeycomb-like structure, top and bottom walls secured to said core, and side walls located to cooperate with said top and bottom walls to substantially enclose said core, downwardly tapered legs on said body adjacent the corners thereof, said legs being open at their upper ends and being hollow to enable telescoping of the legs on an upper pallet into the legs on a lower pallet such that the body on said upper pallet rests on the body of said lower pallet when the upper pallet legs are telescoped into the lower pallet legs and such that a plurality of said pallets can be stacked in a minimum space, said legs terminating at their upper ends substantially at said top wall, each of said pallet side walls having inwardly inclined upper and lower edge portions so as to provide a wedge-shaped opening between stacked pallets to facilitate insertion of lifting and handling tools between adjacent stacked pallets.

4,279,205

STORAGE

Stephen P. Perkins, Beverly, and Alex F. Wormser, Marblehead, both of Mass., assignors to Wormser Engineering, Inc., Middleton, Mass.

Filed Sep. 24, 1979, Ser. No. 78,651
Int. Cl.³ F23G *5/00, 7/00*; F23D *1/00*
U.S. Cl. 110—245 **10 Claims**

1. A fluidized bed combustor comprising

burning means including

apertured means defining a support for fluidization of contents supported thereby,

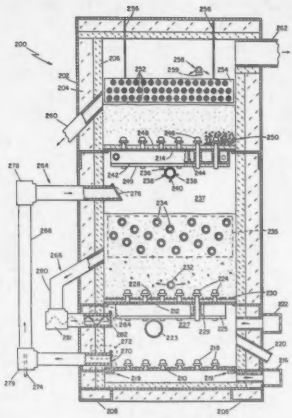
housing means for defining with said support a burning zone,

heat transfer means for carrying fluid therethrough to remove heat produced by burning,

said heat transfer means being spaced above said support to provide thereunder in said housing means above said support a first storage zone of depth to permit fluidized bed combustion of contents over said support without settledbed contact between the surface of said contents and any said heat transfer means,

storage means defining a second storage zone to allow storage of materials removed from said first storage zone,

means for selectively transferring materials from said first storage zone to said second storage zone, and



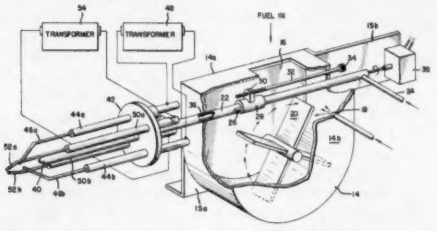
means for selectively transferring material from said second storage zone to said first storage zone.

4,279,206

COAL BURNING SYSTEM

Charles D. Pitts, and David A. Pitts, both of 3600 High Point Rd., Winston-Salem, N.C. 27107

Filed Jul. 10, 1979, Ser. No. 56,411
Int. Cl.³ F23D *1/00*
U.S. Cl. 110—263 **14 Claims**



1. Powdered coal burning system in which solid powdered coal particles of a size up to 6 microns are utilized as the primary fuel in a furnace, said system comprising:

(a) a mixing chamber having a first inlet for receiving said powdered coal particles, a second inlet for receiving air flow with which the powdered coal particles are to be mixed, and an agitator means in said mixing chamber, in addition to said air flow, for effecting and maintaining a substantially homogenous mixture of air and powdered coal particles;

(b) a furnace chamber including a burner nozzle therein, said burner nozzle including igniting means for lighting said coal particles in said mixture as they exit from said nozzle;

(c) a feed means for adjustably withdrawing selected portions of said mixture of air and powdered coal particles from said mixing chamber and delivering said mixture to said nozzle; and

(d) whereby said powdered coal particles are first mixed with the air to form a cloud of coal powdered entrained in

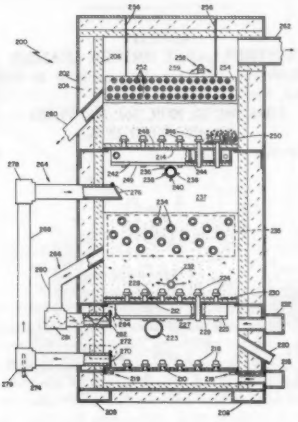
air, then said cloud is conveyed to said nozzle and ignited to burn in said furnace.

4,279,207

FLUID BED COMBUSTION

Alex F. Wormser, Marblehead, Mass., assignor to Wormser Engineering, Inc., Middleton, Mass.

Filed Apr. 20, 1979, Ser. No. 31,782
Int. Cl.[3] F23B 7/00
U.S. Cl. 110—345 12 Claims



1. The method of combustion which comprises

providing a layer of a first particulate material supported on a first distributor plate,

said first particulate material being incombustible,

fluidizing said first particulate material with a stream of air to provide a first fluidized bed,

said first fluidized bed being contained in a first zone of height proper to prevent loss of said first particulate material,

introducing into said first fluidized bed a minor proportion of a flowable combustible fuel,

burning said flowable combustible fuel in said air to form combustion gas,

providing downstream of said first fluidized bed a second layer of a second particulate material supported on a second distributor plate,

said second particulate material containing a sorbent for a component of said combustion gas,

fluidizing said second particulate material by passing said combustion gas through said second distributor plate to provide a second fluidized bed,

said second fluidized bed being contained in a second zone of height proper to prevent loss of said second particulate material,

transporting said combustion gas against discrete objects too heavy to be moved by said combustion gas flow to slow velocity into said second fluidized bed,

providing a quantity of microchips by interparticle collision in said second fluidized bed at a rate to provide new reactive surface area as fast as reaction depletes formerly reactive surface area,

introducing into said second fluidized bed a nonsorbent ballast, and

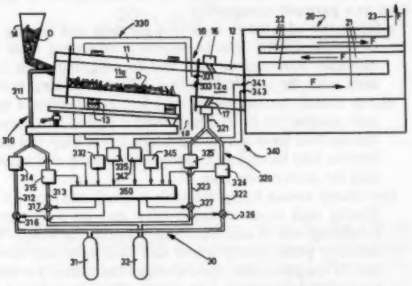
controlling the depth of said second fluidized bed in order to control fluidization and elutriation.

4,279,208

METHOD AND APPARATUS FOR HEAT TREATMENT OF INDUSTRIAL WASTES

Paul Guillaume, Paris; Pierre Karinthi, Jouy-en-Josas, and Jacques Nicolas, Paris, all of France, assignors to L'Air Liquide, Societe Anonyme Pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France

Filed Dec. 3, 1979, Ser. No. 99,888
Claims priority, application France, Dec. 4, 1978, 78 34096
Int. Cl.[3] F23G 5/02
U.S. Cl. 110—346 29 Claims



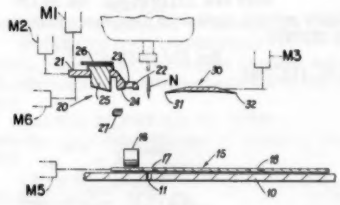
1. A method for the heat treatment of industrial wastes wherein at least some of the constituent materials of said wastes are subjected to combustion and/or to pyrolysis to produce a residue and flue gases, said method comprising the steps of supplying air at a first feed rate; supplying substantially pure oxygen at a second feed rate; mixing said air and oxygen to form an oxygenated combustion-supporting gas; supplying said oxygenated gas to said wastes for the heat treatment of the latter; sensing at least one predetermined characteristic of said flue gases; and regulating at least one of said first and second feed rates in response to said sensed characteristic to maintain said characteristic within predetermined limits.

4,279,209

APPARATUS FOR HOLDING AND UNFOLDING BELT LOOP

George P. Diacont, Jr., Richmond, Va., assignor to AMF Incorporated, White Plains, N.Y.

Filed Sep. 11, 1980, Ser. No. 186,072
Int. Cl.[3] D05B 3/12
U.S. Cl. 112—104 11 Claims



1. A method of sewing a drop type belt loop on to a garment comprising the steps of

positioning a garment to receive a belt loop;

providing a folded belt loop with the top fold having a folded under lower loop end and the bottom fold having an exposed upper loop and extending past the folded under lower loop ends;

positioning the belt loop with the exposed upper loop and overlying a predetermined portion of the garment;

clamping the upper loop end with the garment therebeneath

and further clamping the garment at a distance longitudinally spaced from the upper loop end adjacent to the portion of the garment to which the lower loop end is to be tacked;

moving the belt loop and garment laterally in unison when tacking the upper loop end to the garment;

moving the garment and lower loop end relative to one another longitudinally thereby positioning the lower loop end adjacent to where the garment is further clamped; and

again moving the belt loop and garment laterally in unison when tacking the lower loop end to the garment.

7. In combination with a tacker type sewing machine having a bed with a needle hole, apparatus for tacking a drop type belt loop to a garment comprising

a feed plate adapted to receive a garment and having a pair of longitudinally spaced laterally extending slots being movably mounted on said bed for aligning each of said slots with the needle hole in a different tacking position;

clamp means spaced above said bed and having a pair of jaws adapted to receive and hold a folded belt loop with the top fold having a folded under lower loop end and the bottom fold having an exposed upper loop end extending past the lower loop end;

said clamp means being movable toward said bed for positioning said exposed upper loop end on a grment and overlying one of said slots aligned with the needle hole;

a stabilizer plate spaced above said feed plate and having a pair of longitudinally spaced edges and means for moving said stabilizer plate toward said bed until one of said edges clamps the upper loop end and the garment therebeneath adjacent one of said slots against said feed plate and the other of said edges clamps the garment adjacent the other of said slots against said feed plate;

said feed and stabilizer plates and clamp means being movable laterally in unison for moving said belt loop and garment laterally when tacking the upper loop end to the garment;

said feed and stabilizer plates and one of said jaws being movable to move the garment and lower loop end longitudinally in opposite directions relative to one another to align said other of said slots with the needle hole and to position the lower loop end over said other of said slots; and

said feed and stabilizer plates and clamp means being movable laterally in unison for again moving the belt loop and garment laterally when tacking the lower loop end to the garment.

4,279,210

LOOPER THREAD TENSION DEVICE

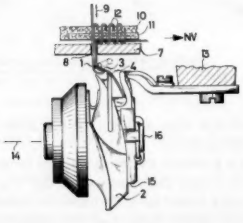
Erich Druffel, Bielefeld, Fed. Rep. of Germany, assignor to Dürkoppwerke GmbH, Bielefeld, Fed. Rep. of Germany

Filed Jun. 22, 1979, Ser. No. 51,159

Claims priority, application Fed. Rep. of Germany, Jun. 24, 1978, 2827832

Int. Cl.³ D05B *57/14*

U.S. Cl. 112—181 **3 Claims**



1. In a double-lock stitch sewing machine having a stitch plate provided with a needle hole into which a needle carries a needle-thread from above the stitch plate through a workpiece on the stitch plate to form a needle-thread loop below the stitch plate, a gripper is rotatable about the axis of a bobbin housing to engage said loop with a gripper thread drawn from a bobbin in said housing, and the needle-thread loop is drawn upwardly through said stitch plate, the improvement which comprises a spring rod mounted between said stitch plate and said gripper in the path of the loop and the portion of the gripper thread engaged therewith for briefly retarding the upward movement of said loop, said rod being deflectable by said loop at said portion, said rod being formed at each end with a respective bight, each of said bights being retained in a clamping block against the underside of said stitch plate by a respective screw.

4,279,211

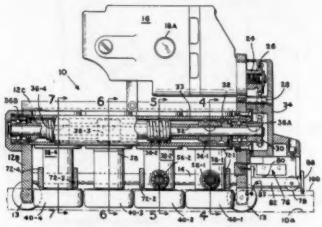
CONTROLLABLY DRIVEN SEAMER

Ewald A. Stellrecht, Malvern, Pa., assignor to Roll Former Corporation, King of Prussia, Pa.

Filed Jul. 23, 1979, Ser. No. 59,553

Int. Cl.³ B21D *39/02*

U.S. Cl. 113—55 **14 Claims**



1. Apparatus for completing the seams of two preformed abutting sheets, said apparatus comprising a body, a plurality of wheels on said body whereby said body can straddlingly roll over the preformed abutting sheets, a plurality of die rollers longitudinally aligned in said body, a plurality of backing rollers longitudinally aligned in said body, each of said backing rollers being operatively opposite a different one of said die rollers to form sets of die rollers and backing rollers whereby a backing roller and a die roller can cooperatively pinch the partially formed seam, pivotable mounting means on said body supporting said die rollers for movement towards and away from said backing rollers between operative closed and inoperative open positions, drive means for driving at least some of said rollers in rotation, and a control means extending from said body for sensing the presence of the partially formed seam to control the operation of said drive means also sensing obstructions in the path of said apparatus to deactivate the drive means, said control means comprising switch means operatively associated with said drive means for controlling the operation thereof, actuator means facing said switch means and including first sensor means for sensing the presence of a seam and second sensor means for sensing the presence of an obstruction, and means connecting said actuator means to said body for cooperation with said switch means to selectively control the operation of said drive means in response to the presence of a seam and an obstruction.

4,279,212

ASSEMBLY FOR TREATING VESSEL HULLS

Hans G. Lundberg, Löddeköpinge, Sweden, assignor to Marinkonsult Hans Lundberg AB, Trelleborg, Sweden

Filed May 29, 1979, Ser. No. 43,564

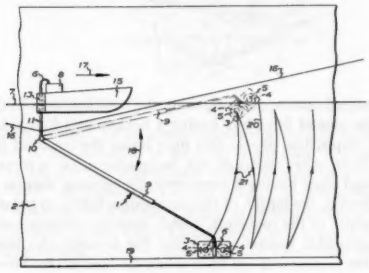
Claims priority, application Sweden, Jun. 1, 1978, 7806437

Int. Cl.³ B63B *59/00*

U.S. Cl. 114—222 **10 Claims**

1. An assembly for treating underwater surfaces of fixed or

floating constructions, for example, ships' hulls, the assembly having a frame which supports at least two motor-driven, rotatable treatment devices which are moveable into abutment against the construction surfaces, wherein the frame is connected to one end of an elongate member which, at its other end, is pivotally connected to a joint which, in the treatment, is substantially stationary with respect to the frame and the construction and is connected to a vessel floating on the surface of the water, which supports the frame and the elongate member and which is moveable along the construction surfaces in a forward direction, wherein said joint is located beneath the water line and is attached to an anchorage which is



resiliently connected to said vessel by spring means, wherein said elongate member extends substantially horizontally forwardly from said joint and is pivotable between a lower position at which the frame is disposed below the joint and an upper position at which the frame is disposed above the joint adjacent the water line, and wherein said at least two treatment devices are inclined somewhat with respect to the abutting surface of the construction being treated, such that said treatment devices produce a force for their own driving reciprocally between said upper and lower positions, said treatment devices treating mutually subsequent portions of the construction surfaces as a result of the driving of the treatment devices and the movement of the vessel.

4,279,213

RESIN MOLDED PRODUCTIONS DESIGNED TO DISPLAY EXTINCTION OF ACTIVITY

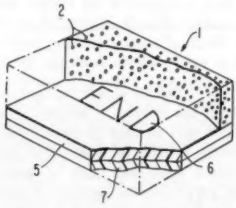
Yoshiaki Urahama, and Tetuo Numoto, both of Ibaraki, Japan, assignors to Nitto Electric Industrial Co., Ltd., Ibaraki, Japan

Filed Mar. 20, 1980, Ser. No. 132,344

Claims priority, application Japan, Mar. 20, 1979, 54/35973[U]

Int. Cl.³ G01N *21/17*

U.S. Cl. 116—200 **6 Claims**



1. In a resin molded controlled-release product which comprises a volatile or elutable active agent dispersed in a substantially transparent and inert resin molded material, the improvement which comprises a colored material located inside or on the back surface of the molded product which is not visible through the product at the initial concentrations of the active agent, but is visible through the resin product at concentrations of the active agent at which the activity of the product is substantially extinct.

4,279,214

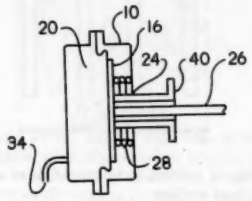
BRAKE WEAR INDICATOR

Joseph W. Thorn, 1165 W. 15th St., Escondido, Calif. 92025

Continuation of Ser. No. 14,136, Feb. 22, 1979, abandoned. This application Feb. 19, 1980, Ser. No. 122,313

Int. Cl.³ F16D *66/02*

U.S. Cl. 116—208 **10 Claims**



1. In a fluid actuated vehicle brake system having a brake actuator housing divided by a diaphragm means into ambient and pressure fluid chambers, and further having resilient means biasing said diaphragm means to a brake-off position, an improved brake wear indicator comprising:

indicator means comprising a sleeve disposed through an aperture in said housing and further comprising an elongated indicator element in engagement with said diaphragm means and extending out of said aperture, said indicator element being displaceable responsive to a displacement of said diaphragm, said sleeve being constrained against movement relative to the margins defining said aperture, said indicator element being constrained against free movement relative to said sleeve whereby displacement of said diaphragm means to a brake-on position effects extension of said indicator element farther out of said housing, and whereby said indicator element is frictionally constrained against unassisted movement inwardly of said sleeve after said diaphragm means returns to its brake-off position, said indicator means having indicia located externally of said housing for determining the amount of said extension of said indicator element responsive to said displacement of said diaphragm, said indicator means having a registration element movable to a zero index position for establishing a zero index position of said index element.

4,279,215

APPARATUS FOR SPRAYING WORKPIECES AND INTERCEPTING OVERSPRAY

Gerhard Schäfer, Neunkirchen, Fed. Rep. of Germany, assignor to Fritz Schäfer GmbH, Neunkirchen-Salchendorf, Fed. Rep. of Germany

Filed May 30, 1979, Ser. No. 43,846

Claims priority, application Fed. Rep. of Germany, Jun. 1, 1978, 2823958

Int. Cl.³ B05B *1/28*

U.S. Cl. 118—326 **9 Claims**

1. An apparatus for the surface-coating of a series of workpieces with a hardenable liquid, comprising:

a booth;

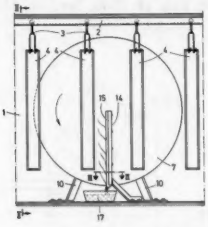
nozzle means in said booth connected to a source of coating liquid and adapted to discharge same in a spray cone centered on a substantially horizontal axis;

conveyor means in said booth for transporting a series of generally vertical workpieces along a predetermined path past said nozzle means across said spray cone;

a disk with a substantially vertical front surface facing said nozzle means at a location in said booth behind the path of

said workpieces, said front surface being large enough to intercept any excess liquid in said spray cone bypassing the workpieces to be coated;

drive means coupled with said disk for unidirectionally rotating same about an axis substantially parallel to the cone axis and at a rate slow enough to allow the intercepted liquid to form a coherent film of coating material on said front surface;



wiper means in contact with said surface at a location offset from said spray cone for continuously stripping off said film during operation of said drive means; and

a receptacle below said wiper means for receiving the coating material removed by said wiper means from said disk.

4,279,216

CATHODE SHIELDED COATING APPARATUS

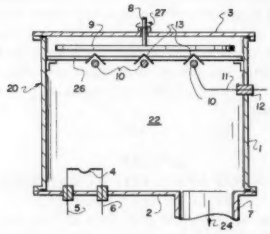
Rainer Buhl, Sargans, and Hans Signer, Oberschaan, both of Switzerland, assignors to Balzers Aktiengesellschaft für Hochvakuumtechnik und Dünne Schichten, Liechtenstein

Filed Jan. 28, 1980, Ser. No. 115,729

Claims priority, application Switzerland, Feb. 1, 1979, 1182/79

Int. Cl.³ C23C *13/03*

U.S. Cl. 118—723 **12 Claims**



1. A vacuum evaporator comprising wall means defining a vacuum chamber, a gas inlet port connected to said chamber for the inlet of gas molecules into said chamber, an evaporant source arranged in said chamber, a supporting structure spaced from said evaporant source in said chamber having means for mounting at least one substrate to be coated, at least one electrode connected as a cathode and adapted for cleaning a substrate to be coated, said cathode being disposed directly in front of and generally spaced about a few mean free lengths of the path of the gas molecules at operating pressure from said substrate surfaces to be coated spaced from said evaporant source, and a screening element provided in said chamber between said electrode and said substrate surface in such a position that any direct optical path between the electrode and the substrate surface is interrupted.

4,279,217

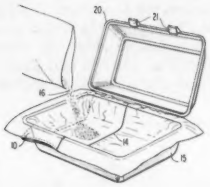
LINER FOR A LITTER BOX

Rebecca K. Behringer, 8524 Etta Dr., Springfield, Va. 22152

Filed May 21, 1979, Ser. No. 41,101

Int. Cl.³ A01K *1/00*

U.S. Cl. 119—1 **12 Claims**



1. An animal commode comprising the combination of (a) a rectangular animal litter box having a bottom and four sides, (b) a flat, disposable, plastic film liner lining the inside of the box, said liner, when flattened out, being shaped like a rectangle, and said liner having a transverse slit opening therein at about its center, the length of the slit opening being no greater than the width of the rectangle, which opening communicates with a collapsible pocket which lies flat beneath the liner, whereby the pocket will fall open when the liner is lifted from the box by its edges, and will receive and hold soiled adsorbent that has been resting on top of the liner, and (c) a layer of particulate, sanitary adsorbent on top of the liner.

4,279,218

CULTIVATION OF MARINE AND AQUATIC SPECIES

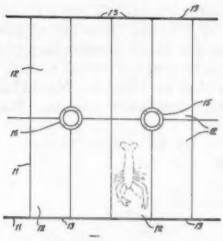
Peter L. Brinkworth, 183 Reynolds Rd., Mt. Pleasant, Australia

Filed Feb. 13, 1979, Ser. No. 11,999

Claims priority, application Australia, Feb. 15, 1978, PD3398

Int. Cl.³ A01K *61/00*

U.S. Cl. 119—2 **13 Claims**



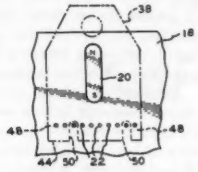
1. A method of cultivating marine and aquatic species wherein the species are housed in habitats in which they remain for the major part of their growth cycle, said habitats being located within a body of water, said habitats being in fluid communication with said body of water through restricted passages, supplying the interior of each habitat with pretreated water sufficient to maintain a compatible environment for the species within the habitat through an inlet in communication with a source independent of the surrounding body of water, the supply of pretreated water being of sufficient volume so that the flow of water is substantially from the compatible environment through the habitat and out to an incompatible zone located external to the habitat through said restricted passage means.

4,279,219

LIGHT RESPONSIVE ANIMAL ACTUATED APPARATUS

Cletus A. Brooks, Onsted, Mich., assignor to Selective Feeder Company, Onsted, Mich.

Filed Oct. 26, 1979, Ser. No. 88,378
Int. Cl.[3] A01K 5/02
U.S. Cl. 119—51 R 14 Claims



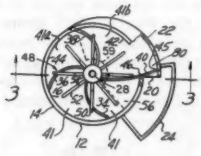
9. A actuator for an animal actuated apparatus adapted to be worn by the animal to be serviced comprising, in combination, an actuator body, information means defined upon said actuator body, and orientation means defined on said actuator body for orienting said actuator body to interrogation means, said information means being located upon said actuator body at a predetermined location relative to said orientation means.

4,279,220

AUTOMATIC FEEDING DEVICE

Walter Kukurba, 110 Peckham St., Port Charlotte, Fla. 33952

Filed Nov. 15, 1979, Ser. No. 94,590
Int. Cl.[3] A01K 5/02, 61/02
U.S. Cl. 119—51.11 7 Claims



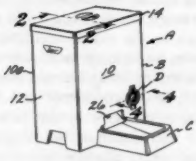
1. An animal feeding device comprising a feed storage bin in the form of an enclosure having a cylindrical side wall and a flat bottom wall, a rotatable shaft vertically extending from said bottom wall, means for driving said shaft in rotation, at least one elongated rectangular flexible blade mounted on said shaft and extending generally radially from said shaft, said flexible blade being disposed with an edge in sliding engagement with said bottom wall and a tip in engagement with said side wall, said blade having a length greater than the radial distance from said shaft to said cylindrical wall for causing said blade to be normally elastically bowed in the direction of rotation of said shaft, a spiral enclosed channel disposed at a portion of the periphery of said enclosure, said spiral channel having a floor disposed coplanar with said flat bottom wall, a slot for accepting the tip of said blade formed in said cylindrical side wall and placing said spiral channel in communication with the interior of said enclosure whereby at least the tip of said blade extends into said spiral channel as said blade rotates, an outlet aperture at the end of said spiral channel, power drive means for rotating said shaft, and timing means for energizing said power drive means at timed intervals for predetermined time durations.

4,279,221

TIMED FOOD DISPENSER FOR ANIMALS

Oscar O. Arvizu, 438 E. 246th Pl., Carson, Calif. 90745

Filed Apr. 21, 1980, Ser. No. 142,106
Int. Cl.[3] A01K 5/02
U.S. Cl. 119—51.11 2 Claims



1. An automatic animal feeding apparatus of the type that includes an elongate upwardly extending housing that has first and second side walls, a pair of end walls; a transverse rearwardly and downwardly sloping partition in said housing that cooperates with the upper portion of the latter to define a hopper in which feed may be stored, said partition having an opening therein adjacent said second side wall; a downwardly and forwardly extending chute in said housing disposed below said partition, said chute having an arcuate shaped section in the lower portion thereof, said chute in communication with an opening in the lower portion of said first side wall, said apparatus being characterized by including:

a. a food dispenser that includes first and second oppositely disposed receptacles capable of each holding a predetermined quantity of said food;

b. a shaft to which said food dispenser is secured;

c. first means for so rotatably supporting said shaft within said housing that said dispenser is disposed between said hopper and chute, with each of said receptacles capable of being disposed in a first position where said feed can flow downwardly by gravity through said opening from said hopper into said receptacle by gravity, and said dispenser capable of being subsequently rotated through substantially one hundred and eighty degrees to a second position where said receptacle filled with said food is inverted and said food discharges into said chute to slide downwardly by gravity to the exterior of said housing;

d. an electric motor that drives said shaft;

e. an electrically operated timer that includes a plurality of lugs, each of said lugs capable of being disposed in an actuating position;

f. first and second oppositely disposed members that rotate concurrently with said shaft;

g. first and second single pole, double throw electric switches, each of said switches including first and second spaced contacts and a spring-loaded blade, said blade of said first switch at all times tending to be in engagement with said first contact and moving into engagement with said second contact of said first switch when engaged by the one of said lugs of said timer that is in an actuating position, said blade of said second switch at all times tending to be in engagement with said second contact and moving into engagement with said first contact of said second switch when engaged by one of said oppositely disposed members; and

h. an electric circuit of which said timer, electric motor, and first and second switches form a part, said electric circuit capable of being supplied electric power from a domestic source, said electric circuit including a first electrical conductor that connects said first contact of said first switch and second contact of said second switch, a second electrical conductor that connects said second contact of said first switch and said first contact of said second switch, said dispenser rotating through said one hundred and eighty degrees in first and second stages, said first stage being initiated when one of said members moves said

blade of said first switch into engagement with said second contact thereof and said blade of said second switch is held in engagement with said first contact of said second switch, said first stage of rotation of said dispenser terminating when said member in engagement with said blade of said second switch has rotated to the extent said blade of said second switch moves into engagement with said first contact of said second switch, and said second stage of rotation being initiated when said actuating log of said timer moves to the extent that said blade of said first switch moves into engagement with said first contact of said first switch to complete said electric circuit through said first electrical conductor and second contact and blade of said second switch, with said second stage terminating after said dispenser has rotated substantially one hundred and eighty degrees one of said members breaks said electric circuit by moving said blade of said second switch out of engagement with said second contact of said second switch and into engagement with said first contact thereof.

4,279,222

FEED OF MATERIAL TO FLUIDIZED BEDS

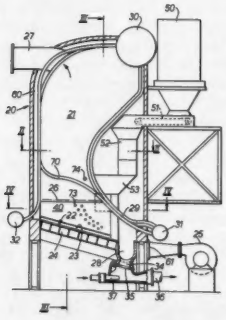
Arnold P. Pearce, Chelwood Gate, England, assignor to Flameless Furnaces Limited, London, England

Continuation of Ser. No. 934,921, Aug. 18, 1978, abandoned. This application Oct. 26, 1979, Ser. No. 88,672

Claims priority, application United Kingdom, Aug. 19, 1977, 34814/77; Nov. 24, 1977, 48928/77

Int. Cl.³ F22B *1/02*

U.S. Cl. 122—4 D **16 Claims**



1. A fluidised bed combuster comprising a housing having an air diffuser bed support arranged to support and fluidise a bed of granular material in the housing, and at least one baffle extending in a generally vertical plane and vertically spaced from the bed support to define on one side of the bed a quiet zone of bed material which is not fluidised in operation in communication beneath the baffle with the remainder of the bed which is fluidised in operation, the top of the baffle lying below the upper surface of the bed in operation so that material from the fluidised bed flows over the baffle into the quiet zone, the combuster including feed means arranged to feed material to be burnt into the quiet zone for passage from that zone under the baffle into the fluidised zone in operation.

4,279,223

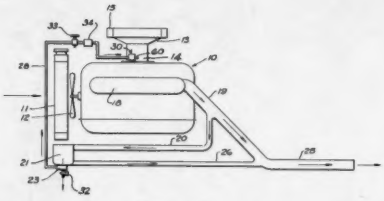
INTERNAL COMBUSTION ENGINE FUEL-SAVING AND POLLUTION-REDUCING SYSTEM

John J. Csonka, 625 Linwood Ave., Buffalo, N.Y. 14209, and Albert B. Csonka, 109 Larchmont Rd., Buffalo, N.Y. 14214

Continuation of Ser. No. 905,996, May 15, 1978, abandoned. This application Jan. 4, 1980, Ser. No. 109,496

Int. Cl.³ F02M *25/02*

U.S. Cl. 123—25 N **1 Claim**



1. A fuel-saving and pollution-reducing system for internal combustion engines having a carburetor for receiving liquid fuel and air and for delivering an air-fuel mixture to said engine, means for controlling the power output of the engine, and a conduit for conducting exhaust gases from the engine; said system increasing the efficiency of internal combustion engines by allowing the use of increased compression ratios by adding partly distilled cooling water into the carburetor, in the form of micro-fine particles and by automatically supplying the water in exactly predetermined amounts best suited to various loads; said system being usable with higher than usual compression ratios by adding water spray into the engine's combustion chamber to lower the temperature of the compressed air-fuel mixture during the compression stroke by the evaporation of the water-spray; the amount of water being independent of both the engine RPM and the intake manifold pressure of the engine; the water metering device being controlled by the accelerator linkage of the carburetor which determines at every engine load the optimum amount of water to be added into the engine; the water control means excluding water addition at idling and at small loads of the engine; said cooling water being constantly produced during the running of the car entirely by condensation of the water-vapor content of the exhaust gases of the engine in an air-cooled condenser.

4,279,224

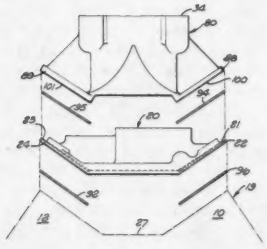
CONVERTIBLE INTAKE MANIFOLD

Robert C. Szabo, and Peter J. Incaudo, Jr., both of 13505 Shoup Ave., Hawthorne, Calif. 90250

Filed Sep. 20, 1979, Ser. No. 77,452

Int. Cl.³ F02B *75/22*

U.S. Cl. 123—52 MV **6 Claims**



1. An intake manifold assembly for replacing a stock intake manifold on an engine having a V-shaped engine block with dual cylinder banks each having a cylinder bank mating sur-

face with a plurality of ports therein, the engine having an engine valley between the dual cylinder banks, the intake manifold assembly comprising:

at least one removable center runner member having a carburetor mount, comprising:

first manifold runner means having a first runner mating flange remote from the carburetor mount, with communicating runner ports therethrough,

second manifold runner means having a second runner mating flange remote from the carburetor mount with communicating runner ports therethrough;

a manifold base member integrally having:

a coolant crossover section at one end,

a distributor boss section at a second end,

an engine valley cover section between the coolant crossover section and the distributor boss section, and

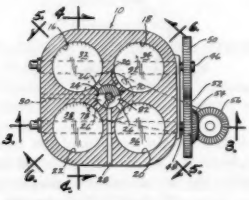
a pair of port flanges on the opposite sides of the engine valley cover section between the coolant crossover section and the distributor boss section, each having a top mating face, the manifold base member further having a continuous bottom mating face for being positioned and held against the cylinder bank mating surfaces for interconnecting the coolant crossover section to the engine block and enclosing the engine valley, the first and second runner mating flanges of the center runner member being positioned and held adjacent one of the top mating faces of the manifold base member, whereby one center runner member can be replaced by second center runner member without removing the manifold base member.

4,279,225

ROTARY VALVE ENGINE

Herbert H. Kersten, 730 Wraywood Dr., Fort Dodge, Iowa 50501

Filed Apr. 12, 1979, Ser. No. 29,326
Int. Cl.³ F01L *7/00*
U.S. Cl. 123—80 BB **9 Claims**



1. A rotary valve engine comprising:

an engine housing having a plurality of vertical power cylinders therein each of said cylinders having a cylindrical sidewall and upper and lower axial ends;

an elongated vertical valve cylinder formed in said housing said cylinder having a cylindrical sidewall and upper and lower axial ends;

a plurality of bores in said housing, each of said bores having a first end in communication with one of said power cylinders through said cylindrical sidewall thereof and a second end in communication with said valve cylinder through said cylindrical sidewall thereof, said second ends being positioned in spaced apart relationship around the cylindrical circumference of said valve cylinder at the said axial height within said valve cylinder;

an elongated cylindrical valve spool rotatably mounted in said valve cylinder and having a cylindrical side wall, a fuel air port formed in said spool sidewall and being in communication with a source of fuel air mixture, and an exhaust port formed in said spool sidewall and being in communication with the atmosphere;

said valve spool being rotatable to cause said fuel air port and said exhaust port each to move into communication one at a time with said second ends of said bores;

a reciprocating piston within each of said cylinders;

at least two output shafts;

means connecting each of said output shafts to at least one of said pistons for causing rotation of said output shafts in response to reciprocation of said pistons;

mechanism connecting at least one of said output shafts to said spool for causing rotation of said spool in response to rotation of said output shafts;

gear mechanisms interconnecting said output shafts and said valve spool for causing said spool to rotate in response to rotation of said output shafts so that said valve spool completes one revolution while said output shafts each complete two revolutions;

an exhaust channel extending through said housing and including a first end in communication with said valve cylinder and a second end leading to the exterior of said housing;

said exhaust port of said valve spool comprising an annular exhaust groove in said spool in communication with said first end of said exhaust channel, said annular exhaust groove having an axially upwardly extending notch therein which is movable in communication one at a time with said second ends of said bores leading to said power cylinders;

a fuel air channel extending through said housing and having a first end in communication with said valve cylinder and a second end in communication with a source of fuel-air mixture;

said spool having a central chamber within the interior thereof, an annular fuel-air groove extending therearound and in communication with said first end of said fuel-air channel, and a first chamber opening in said spool providing communication from said fuel air groove to said chamber;

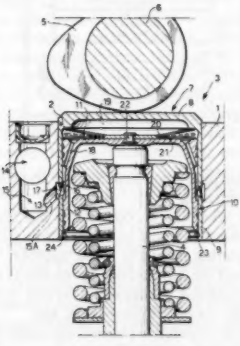
said fuel-air port of said spool comprising a second opening in said spool providing communication from the exterior of said spool to said chamber.

4,279,226

HYDRAULIC TAPPET FOR AN INTERNAL COMBUSTION ENGINE HAVING AN OVERHEAD CAMSHAFT

Aurelio Lampredi; Aldo Leoni, and Luigi Ioli, all of Turin, Italy, assignors to Fiat Auto S.p.A., Turin, Italy

Filed Aug. 13, 1979, Ser. No. 66,142
Claims priority, application Italy, Nov. 15, 1978, 53889/78[U]
Int. Cl.³ F01L *1/14, 1/24*
U.S. Cl. 123—90.55 **1 Claim**



1. An internal combustion engine of the type having: a cylinder head; a lubrication circuit; an overhead camshaft, and a valve having a stem acted upon by a cam of said camshaft,

a hydraulic tappet of the kind which automatically takes up clearance between said valve stem and said cam, including an oil supply conduit connected with said oil lubrication circuit; annular manifold means communicating with said supply conduit, and means defining a plurality of radial ports connecting said manifold means with the interior of said tappet, wherein the improvement comprises a sump which extends below the level of said manifold means and which communicates with said oil supply conduit adjacent said tappet,

said tappet is axially slidable in a cylindrical seating formed in said cylinder head,

said tappet includes a first inverted cup-shaped member which is axially slidable in said seating and defines said radial ports, and a second inverted cup-shaped member which is axially slidable in said first member and rests on said valve stem,

said second member comprises an end wall, and a skirt dependent from said end wall,

said tappet further includes a cup spring interposed between said end walls of said tappet members to urge said tappet members apart, and a flexible disc interposed between said cup spring and said end wall of said second member to act as a valve and to control the flow of oil, and

said spring and said disc are rivetted centrally to said end wall of said second member.

4,279,227

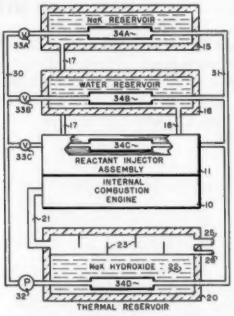
HEAT STORAGE IN BY-PRODUCTS OF AN INTERMITTENT PROCESS

Stephen F. Skala, 3839 S. Wenonah, Berwyn, Ill. 60402

Continuation-in-part of Ser. No. 301,285, Oct. 27, 1972, abandoned, and a continuation-in-part of Ser. No. 457,207, Apr. 2, 1974, Pat. No. 3,911,284, and a continuation-in-part of Ser. No. 464,454, Apr. 26, 1974, abandoned, and a continuation-in-part of Ser. No. 578,527, May 19, 1975, Pat. No. 4,020,798, and a continuation-in-part of Ser. No. 779,788, Mar. 21, 1977, Pat. No. 4,189,916. This application Sep. 27, 1979, Ser. No. 79,322

Int. Cl.³ F02N *17/02*

U.S. Cl. 123—179 H **10 Claims**



1. A system for producing heat and for transferring the heat in a vehicle comprising

a heat engine which forms collectable hot reaction by-products and requires a heat input for starting after a substantial nonoperating period in frigid weather,

means to collect the hot reaction by-products in an insulated vessel to comprise a thermal reservoir wherein heat is stored in the reaction by-products, and

a fluid circuit to circulate a thermal exchange fluid in selectable paths which include heat exchangers in the engine and in the thermal reservoir to provide heat transfer from the thermal reservoir to the engine in frigid weather prior to starting the engine.

4. A method for using hot reaction by-products comprising the steps of:

transporting reactants to a reaction chamber during an operating period of substantial duration to produce a useful product and hot reaction by-products,

collecting at least a portion of the hot by-products in a thermal reservoir comprising the collected by-products within an insulated vessel,

transferring heat from the thermal reservoir to users during a nonoperating period of substantial duration whereby the by-products are cooled, and

removing at least a portion of the cooled by-products from the thermal reservoir for replacement by hot by-products during an operating period.

4,279,228

DEVICE FOR THE CONTROL OF THE TRAVELING SPEED OF A MOTOR VEHICLE

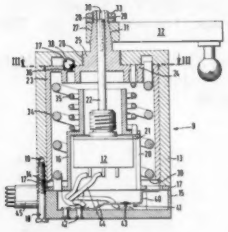
Arnold Mann, Bieber, Fed. Rep. of Germany, assignor to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 1, 1979, Ser. No. 80,861

Claims priority, application Fed. Rep. of Germany, Oct. 5, 1978, 2843456

Int. Cl.³ F02D *11/10*

U.S. Cl. 123—352 **12 Claims**



1. In a device for the control of the traveling speed of a motor vehicle with a vehicle driver actuatable gas pedal and with means for the transmission of the movement of the gas pedal to an element which influences the fuel-air mixture, particularly the throttle valve, which means contain a position encoder with an adjustable variable rheostat having two relatively moveable parts and a limit switch, the position encoder being coupled with the gas pedal, the improvement wherein

the position encoder includes a housing forming a substantially hollow cylindrical interior space in which interior space the rheostat is disposed, the latter being operatively fixed to the housing prevented from twisting with one of its two relatively moveable parts,

a bell-shaped body is connected to the other part of the rheostat, said bell-shaped body is rotatably mounted in the hollow cylindrical interior space, and

at least one return spring means for biasing said bell-shaped body into a rest position, said bell-shaped body being operatively connected to the gas pedal such that by means of the latter the bell-shaped body is rotatable from said rest position against the force of said return spring means,

an electric switch secured to said housing,

means cooperating with said bell-shaped body for actuating said electric switch upon rotation of said bell-shaped body by a certain pregiven amount.

4,279,229
ELECTRONIC INJECTION-AMOUNT REGULATING APPARATUS IN AUTO-IGNITED INTERNAL COMBUSTION ENGINES

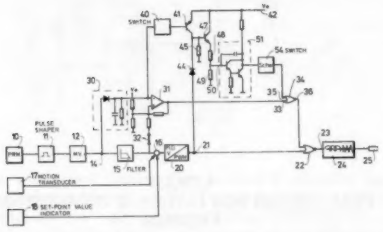
Herbert Arnold, Eberdingen, and Gerd Gerhards, Hemmingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 26, 1978, Ser. No. 928,215

Claims priority, application Fed. Rep. of Germany, Aug. 6, 1977, 2735596

Int. Cl.³ F02D *1/04, 1/06*

U.S. Cl. 123—359 **10 Claims**



1. An apparatus for the electronic regulation of injection amounts in internal combustion engines with auto-ignition comprising means regulating the injection amount of fuel with a pulsed control signal from a regulator having a PID characteristic and where said means producing said control signal indicative of the injection amount is apportioned via a solenoid actuator responsive to a safety switching means, said safety switching means being responsive to the absence of pulse intervals in the control signal for deenergizing the solenoid actuator, a logic gate connected in series with the input of the solenoid actuation and including means for feeding the output signals from the regulator as well as the output signal from said safety switching means to said logic gate.

4,279,230
FUEL CONTROL SYSTEMS FOR INTERNAL COMBUSTION ENGINES

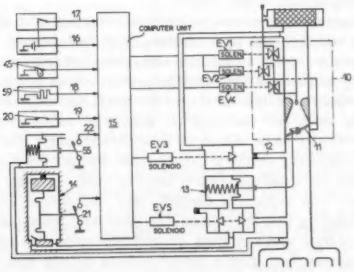
Philippe Bauer, Marly le Roy; Jean Lamy, Croissy-sur Seine, and Bernard Martel, Bagneux, all of France, assignors to Societe Industrielle de Brevets et D'Etudes S.I.B.E., Neuilly-sur-Seine, France

Filed May 2, 1978, Ser. No. 902,243

Claims priority, application France, Dec. 30, 1977, 77 39842; United Kingdom, May 6, 1977, 19149/78

Int. Cl.³ F02G *3/00;* **F02M** *7/00*

U.S. Cl. 123—440 **22 Claims**



1. A fuel control system for an internal combustion engine having an exhaust conduit, comprising:

a probe in the exhaust conduit adapted to generate an electrical signal indicative of exhaust conditions,

at least one circuit for supplying fuel and air to the engine, having solenoid valve means for metering at least the fuel flow rate in said circuit and opening into an air induction passage provided with an operator controlled throttle member downstream of the opening of said one circuit,

a closed loop electronic control circuit connected to said probe and effective to control said solenoid valve means in dependence of said signal,

and means for opening the loop responsive to predetermined operating conditions of the engine,

said electronic circuit having further means for controlling said solenoid valve means in dependence on at least one engine operating parameter other than said exhaust conditions during open loop operation.

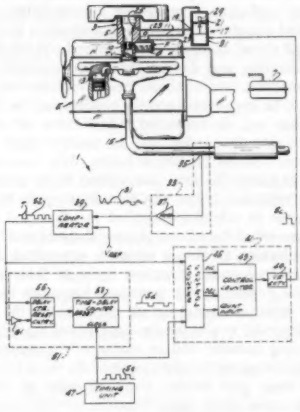
4,279,231
APPARATUS FOR CONTROLLING THE AIR-FUEL RATIO IN AN INTERNAL COMBUSTION ENGINE

Allen W. Lindberg, Kirkwood; Thomas R. Gantzert, Florissant, and Donald L. Hicks, St. Louis, all of Mo., assignors to ACF Industries, Incorporated, New York, N.Y.

Continuation of Ser. No. 767,914, Feb. 11, 1977, abandoned. This application Nov. 7, 1979, Ser. No. 92,121

Int. Cl.³ F02B *3/00;* **F02D** *33/00*

U.S. Cl. 123—489 **13 Claims**



1. Apparatus for controlling the air-fuel ratio in an internal combustion engine to substantially maintain the ratio at the stoichiometric point while the engine is operating under various load conditions, the engine having a carburetor with at least one air passageway therein through which air is drawn into the engine, fuel from a source thereof being supplied to the carburetor through at least one fuel system and mixed with the air as it passes through said carburetor, said carburetor having a conduit through which air is introduced into said system, and the engine further having a chamber for combustion of the resulting air-fuel mixture and means for exhausting the products of said combustion, the apparatus comprising:

means for metering the quantity of air introduced into the fuel system through said conduit thereby to control the air-fuel ratio of the mixture;

an oxygen sensor for sensing the presence of oxygen in the products of combustion and for supplying a first electrical signal representative of the oxygen content therein, said oxygen content being a function of the air-fuel ratio of the mixture;

means for comparing the first electrical signal with a predetermined reference level which is a function of said stoichiometric point to produce a second electrical signal

having first and second signal elements, a first signal element being produced when the air-fuel ratio of the mixture is greater than the predetermined level and a second signal element being produced when the ratio is less than the level, the comparing means comprising a voltage comparator having one input to which is applied the first electrical signal, a second input to which is applied a reference voltage whose amplitude is a function of the oxygen content in the products of combustion at the stoichiometric point and an output from which is supplied the first and second signal elements of the second electrical signal, a first signal element being supplied by the comparator when the first electrical signal amplitude is less than the reference voltage amplitude, a second signal element being supplied when the first electrical signal amplitude exceeds the reference voltage amplitude and a transition from one signal element to the other occurring whenever the first electrical signal amplitude changes from greater to less than the reference voltage amplitude and vice versa;

control means responsive to the second electrical signal for supplying to the metering means a control signal by which the quantity of air introduced into the conduit is controlled and for producing a change in the control signal whenever the second electrical signal has a transition from one signal element to the other thereby for the metering means to change the quantity of air introduced into the conduit by an amount necessary to substantially maintain the air-fuel ratio at the predetermined value and the control means including a reversible accumulating control counter and counter control means responsive to the first and second signal elements of the second electrical signal for incrementing and decrementing the contents of the control counter, said contents being incremented when less air is to be introduced into the conduit and the mixture made richer and decremented when more air is to be introduced into the conduit and the mixture made leaner, the counter control means including first, second, and third logic gates, the first and second logic gates each having a common input, the first logic gate having a second input to which is supplied the first and second signal elements of the second electrical signal and the first logic gate having an output which is connected through an inverter to a count direction input of the reversible accumulating counter, and the second logic gate having as a second input a timing signal, elements of the timing signal being used to change the contents of the reversible accumulating counter, and an output of the second logic gate being connected to a first input of the third logic gate, the third logic gate having a second input to which is supplied a count inhibit signal from the reversible accumulating counter, the inhibit signal being generated when the reversible accumulating counter reaches either an upper or lower count limit, and the output of the third logic gate being supplied to a count input of the reversible accumulating counter; and

means for sampling the second electrical signal over a predetermined time interval starting when a signal element of the second electrical signal is produced to determine whether a transition between signal elements occurs within said time interval, the control means being responsive to the sampling means to produce a change in the control signal if no transition occurs within said time interval whereby the quantity of air introduced into the conduit is changed, but to produce no change in the control signal if a transition does occur within the predetermined time interval whereby the quantity of air introduced into the conduit remains unchanged, the sampling means including time-delay means responsive to timing signal elements for counting from zero to a preselected value and for inhibiting the counter control means from incrementing or decrementing the contents of the reversible accumulating counter until the preselected value is reached, the time-delay means including a delay-counter comprised of a pair of flip-flops, the output of one flip-flop being connected to an input of the second flip-flop and the output of the second flip-flop being connected to the common inputs of the first and second logic gates of the counter control means, and the sampling means further including delay-counter reset circuitry responsive to the signal elements of the second electrical signal for resetting the contents of the delay-counter whenever a transition occurs between first and second elements of the second electrical signal.

4,279,232

FUEL SYSTEM FOR INTERNAL COMBUSTION ENGINES

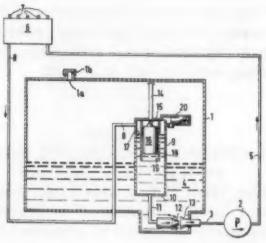
Gregor Schuster, Stuttgart; Johann Schmid, Freiberg; Erwin Schmuck, Waiblingen, and Klaus Rose, Mundelsheim, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 4, 1978, Ser. No. 966,231

Claims priority, application Fed. Rep. of Germany, Feb. 3, 1978, 2804551

Int. Cl.[3] **F02M** *37/20;* **B01D** *53/22*

U.S. Cl. 123—516 **16 Claims**



1. A fuel system for an internal combustion engine comprising:

a fuel tank;

a fuel pump connected to said fuel tank by an induction conduit;

a fuel metering assembly associated with said fuel pump for feeding fuel to said engine;

a return conduit extending from said fuel metering assembly to said fuel tank to discharge excess fuel thereto;

deaeration means included in said return conduit for deaerating said excess fuel, said deaeration means comprising a container positioned in said fuel tank, said container having an upper wall and air discharge means correlated therewith to permit air to flow therethrough; and

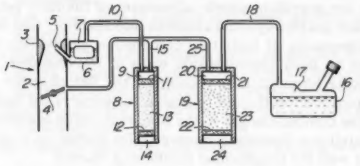
fuel discharge means to permit make-up fuel from said fuel tank and deaerated excess fuel from said container to flow into said induction conduit, said fuel discharge means including first inlet means for admitting deaerated excess fuel from said container, second inlet means for admitting make-up fuel from a lower portion of said fuel tank to replace fuel supplied to said engine, and outlet means for discharging a mixture of said deaerated excess fuel and said make-up fuel into said induction conduit.

4,279,233

DEVICE FOR TRAPPING FUEL VAPOR VAPORIZED IN FUEL FEED SYSTEM OF INTERNAL COMBUSTION ENGINE

Yuichi Tobita, and Masamitsu Okumura, both of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 22, 1979, Ser. No. 41,319
Claims priority, application Japan, May 22, 1978, 53-59938
Int. Cl.³ F02M *25/08*
U.S. Cl. 123—519 **5 Claims**



1. In a fuel feed system of an internal combustion engine comprising a carburetor with a float chamber and a fuel tank, an evaporated fuel vapor trapping device of the type for trapping the vapors of the fuels evaporated in the float chamber of the carburetor and in the fuel tank characterized by comprising:

(a) a first canister device which has its one end communicated with the space above the fuel in said float chamber and with the high suction in the carburetor and its the other end opened at the surrounding atmosphere and which is filled with a first absorbent capable of absorbing vapors of hydrocarbons up to and including those with high carbon numbers, and

(b) a second canister device which has its one end communicated with the space above the fuel in said fuel tank and with the high suction in said carburetor and its the other end opened at the surrounding atmosphere and which is filled with a second absorbent capable of absorbing vapors of hydrocarbons having relatively low carbon numbers, the volume of said second canister device being greater than that of said first canister device.

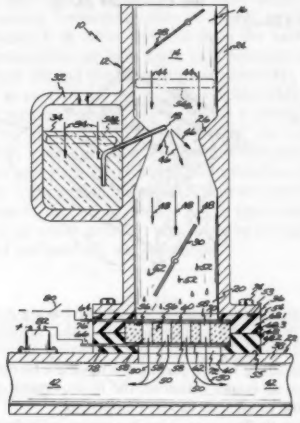
4,279,234

EARLY FUEL EVAPORATION OF CARBURETION SYSTEM

Leo Marcoux, Rehoboth, and Peter G. Berg, Norton, both of Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 2,817, Jan. 12, 1979, abandoned, which is a division of Ser. No. 721,728, Sep. 9, 1976, Pat. No. 4,141,377. This application Jul. 10, 1980, Ser. No. 167,307
Int. Cl.³ F02M *31/00*
U.S. Cl. 123—549 **3 Claims**

1. In combination, carburetor means having an air-fuel passage, an air inlet to said air-fuel passage for admitting varying volumes of air to the air-fuel passage, fuel supply means having a fuel inlet passing varying volumes of fuel through the fuel inlet to said air-fuel passage to be mixed with varying volumes of air in said air-fuel passage, an outlet from said air-fuel passage for delivering a mixture of air and fuel to an engine, and means moveable in the air-fuel passage to selectively vary the volume of the air-fuel mixture delivered to the engine; and a heater means for said fuel which is adapted to display variable heat-output in response to variation in the amount of fuel being furnished to the air-fuel passage through the fuel inlet as the volume of air-fuel mixture being delivered to the engine is varied, said heater means comprising a body of ceramic reistor material of positive temperature coefficient of resistivity adapted to display a sharp anamolous increase in electrical resistivity when heated to a selected temperature, said body having a plurality of heater passages extending through the body between opposite ends of the body and being mounted in said fuel supply means with said heater passages aligned to pass varying volumes of fuel therethrough before being furnished to said air-fuel passage, and means for directing electrical current through the resistor body material for heating the body



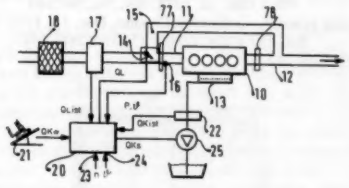
to transfer selected varying amounts of heat to the varying amount of fuel directed through the heater passages for facilitating mixture of the air and fuel in the air-fuel passage prior to delivery of the air-fuel mixture to the engine.

4,279,235

APPARATUS FOR FIXING THE COMPOSITION OF THE GAS CONTENT OF INTERNAL COMBUSTION ENGINE CYLINDERS

Ulrich Flaig, Markgroningen; Fridolin Piwonda, Gerlingen; Gerhard Stumpp, Suttgart, and Wolf Wessel, Oberriexingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 28, 1979, Ser. No. 70,471
Claims priority, application Fed. Rep. of Germany, Nov. 15, 1978, 2849554
Int. Cl.³ F02M *25/06*
U.S. Cl. 123—569 **10 Claims**

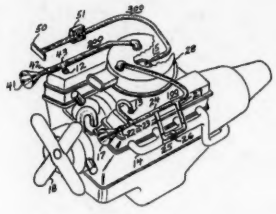


1. An apparatus for fixing the composition of the content and the degree of filling of cylinders in an internal combustion engine with autoignition, comprising a fuel metering device, means for delivering a signal to said fuel metering device dependent at least on the position of the driving pedal, a control element for mixing the aspirated fresh air in said engine with fed-back exhaust gas, measurement value transducer means for the total cylinder filling which is detectable at least indirectly and means for influencing the ratio of fresh air to fuel in accordance with the measurement value from said transducer means by varying the recirculated exhaust gas flow.

4,279,236
AUTOMOTIVE FUEL SAVING SYSTEM

Alfred C. Dallman, 2437 Bending Willow Dr., Kettering, Ohio 45440

Filed Oct. 11, 1979, Ser. No. 83,904
Int. Cl.[3] F02M 25/06
U.S. Cl. 123—573 8 Claims



1. In an internal combustion engine having a sealed crankcase with an inlet orifice and an outlet orifice, an exhaust manifold, an air-fuel intake system having an intake air filter communicating with a carburetor having a throttle plate positioned on an intake manifold, the improvement in the utilization of the crankcase vapors comprising:

a. a first air flow circuit having means including an aspirator for withdrawing the said crankcase vapors from the said crankcase, means for separating and heating large, heavy, particulate matter in the said withdrawn vapors providing smaller, lighter particulate matter, means for returning the said smaller, lighter particulate matter to the said first air flow circuit, and successive means for directing the said first air flow containing the said crankcase vapor with smaller, lighter particulate matter into the said engine intake system;

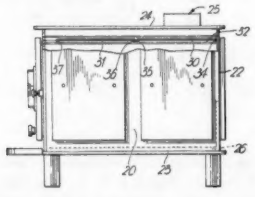
b. a second air flow circuit having means for providing a flow of air divided between the said crankcase inlet orifice and the said intake air filter; and

c. means for providing a third air flow circuit metering air into the said air-fuel intake system, whereby compensation is provided for the addition of the crankcase vapors into the said intake system.

4,279,237
COMBINATION STOVE AND FIREPLACE

Robert D. dePencier, P.O. Box 165, Wolfe Island, Ontario, Canada

Filed Dec. 11, 1978, Ser. No. 967,981
Claims priority, application Canada, Dec. 14, 1977, 293084
Int. Cl.[3] F23L 11/00, 15/00; F24C 1/08
U.S. Cl. 126—77 6 Claims



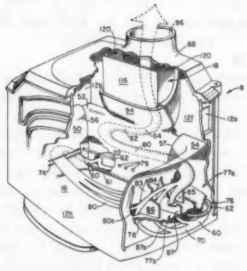
1. A stove having opposing side walls, a rear wall, a bottom wall and a top wall, the walls being interconnected to each other to define a combustion chamber, a flue communicating with said chamber, a front door swingably effecting closure of said combustion chamber, said door embodying therein a primary air pre-heating passage of substantial length relative to the width of the door and having a discharge orifice adjacent the bottom wall of the chamber, said door further embodying therein a secondary air pre-heating passage of substantial length relative to the width of the door and having a discharge orifice into an upper portion of the chamber, said door consisting of an outer shell and an inner plate cooperating with the outer shell to define therebetween walls of said primary and said secondary passages, said outer shell including a front face and a network of webs which define the paths of the primary and secondary air pre-heating passages and support the inner plate, primary and secondary air inlet controls mounted in a front face of the door for controlling admission of air into said primary and secondary air pre-heating passages; longitudinally slidable baffle means disposed in the upper portion of said chamber for providing simple adjustment of the flow path of combustion gas through said chamber into said flue, said baffle means comprising at least two combustion gas baffles each supported by both opposing side walls of the chamber, said baffles being longitudinally slidable of the fire chamber and spaced from the top thereof to enable variation of the path of flow of the combustion gas to the flue, each baffle comprising a plate having a depending transverse lip resting on a rib on each side wall for longitudinal positioning thereof.

4. A convertible wood stove and fireplace having a generally rectilinear combustion chamber formed by interconnected side walls, a rear wall, a top wall, a bottom wall and a front frame, a flue communicating with said chamber, a front door swingably mounted on one side of the frame so as to effect closure of said chamber for a stove mode of usage and to open said chamber for a fireplace mode of usage, a fire screen swingably mounted on the other side of said frame so as to effect screened closure of said chamber when said door is open for a fireplace mode of usage, said door embodying a primary air pre-heating passage of substantial length relative to the width of the door and having a discharge orifice adjacent the bottom of the chamber, said door further embodying a secondary air pre-heating passage of substantial length relative to the width of the door and having a discharge orifice into the upper portion of the chamber, primary and secondary air inlet controls mounted in the front face of the door for controlling admission of the air into said air pre-heating passages, and at least two combustion gas baffles mounted at the side walls for longitudinally slidable movement in the fire chamber and spaced from the top thereof to enable variation of the path of flow of combustion gas to the flue.

4,279,238
WOOD BURNING HEATING APPARATUS

Duncan C. Syme, Chelsea, Vt., assignor to Vermont Castings, Inc., Randolph, Vt.

Filed Oct. 19, 1979, Ser. No. 86,673
Int. Cl.[3] F24C 1/14
U.S. Cl. 126—77 20 Claims



1. A wood burning heating apparatus for operating in either a horizontal combustion mode or an updraft combustion mode comprising

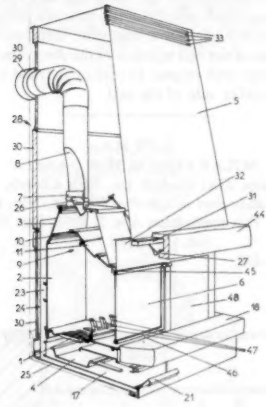
a heat conducting frame member having front, side, and back vertical wall panels, a top panel, and a bottom panel for enclosing a defined volume,

a removable fireback,
a plurality of removable wear plates for defining in combination with said fireback and said wall panels a primary air supply path, and a long circuitous internal flame path,
said primary air supply path having a first enclosed elongated path for supplying air at a first side of the apparatus to a primary combustion chamber,
said long flame path circuitously extending from a second side of said apparatus substantially between said fireback and at least one wear plate, and said frame member, to a top back portion of said apparatus,
said frame member having a flue gas exit aperture for said flame path,
a flue collar, able to engage said frame member at said exit aperture,
a moveable damper pivotable about an axis for providing in a first position an updraft combustion apparatus and in a second position a horizontal combustion apparatus,
means for moving said damper between said first and second positions, and
said damper extending less than the full width of said apparatus.

4,279,239
WOOD-FIRED FIREPLACE

Jean Blum, Obernai, France, assignor to Supra Fabrique d'Appareils de Chauffage et de Cuisine, S.A., Obernai, France

Filed Nov. 28, 1979, Ser. No. 98,319
Claims priority, application France, Dec. 6, 1978, 78 34987; Dec. 6, 1978, 78 34988
Int. Cl.³ F24B *1/18*
U.S. Cl. 126—120 **5 Claims**

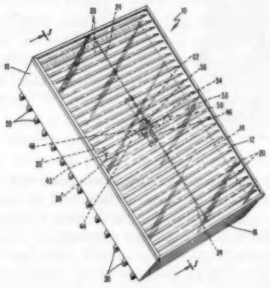


1. A prefabricated, wood-fired fireplace of high heating efficiency, characterised in that it is essentially constituted by a fire-grate (**1**) of refractory cast iron, advantageously of basket form equipped in its forward part with dogs (**47**) intended to retain the logs, a hearth plate (**2**) of refractory cast iron, an upper hearth element (**3**) likewise of refractory cast iron, equipped with a smoke outlet (**7**) adaptable to existing flues (**8**) and provided with a damper (**26**) operable by means of a lever (**27**), a deflector (**9**) disposed beneath the smoke outlet (**7**) and provided with an anti down-draught device (**10**) and a sweeping flap (**11**) disposed beneath the anti down-draught device (**10**), an ash pan (**4**) lodged in a compartment (**17**) of the lower part of the fireplace which at the same time forms a support for a curb (**18**), the pan (**4**) being separated from the ground by a heat protection metal sheet (**25**) and this lower part being provided with at least one convection air inlet (**20**), a hearth door (**6**) of refractory glass forming a spark guard, provided in its upper part with a sealing joint (**45**) and offset from the lower part of the hearth forming therewith a secondary combustion air admission slot (**46**), insulation (**30**) on at least one of the walls of the fireplace (**28**) which are applied against the building wall or walls, the insulated wall being kept spaced from the building wall or walls by the edges of the other fireplace walls, a hood (**5**) which can be covered in its lower part with a decorative piece (**44**) such as a beam or any other decorative element, the support cross-piece (**31**) of which on the upper hearth element (**3**) is offset forward from the said element forming a convection air inlet space (**32**) between the upper hearth element (**3**) and the support cross-piece (**31**), and likewise serves as support for the decorative piece (**44**), the fireplace being provided for the one part with a sliding box (**34**) permitting its adaptation to the height of the room and equipped in its lower part with an insulation element (**38**), and for the other part with a removable dust extraction filter (**39**) placed in the upper part of the hood (**5**) beneath the sliding box (**34**), the hood further being provided in its upper part with at least one hot air outlet grill (**33**) which can be pivoted about a pivot (**43**) of the hood (**5**), the fireplace.

4,279,240
SELF-REGULATING SOLAR WINDOW DEVICE

Bobby L. Artusy, P.O. Box 1161, Newark, Del. 19711

Filed Dec. 4, 1979, Ser. No. 100,101
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—419 **28 Claims**



1. A window device for controlling the transmission of solar radiation therethrough, comprising:
(a) a first diffuser means forming the exterior of the device for diffusing incoming solar radiation;
(b) a second diffuser means spaced interiorly from said first diffuser means for further diffusing incoming solar radiation;
(c) a plurality of substantially planar vanes situated between said first and second diffuser means, with each of said vanes having reflective surfaces and being pivotable about an axis passing through its center of gravity, said vanes being interconnected to move substantially in unison;
(d) means for automatically controlling the inclination of said vanes about their respective axes in response to the amount of solar radiation transmitted past said vanes, said inclination controlling means comprising first sensor means situated between said first and second diffuser means so as to be shaded by at least one of said vanes in direct proportion to the inclination of said vane for sensing the amount of solar radiation transmitted past said vanes, and first actuator means operatively coupled to the output of said first sensor means and to said vanes for pivoting said vanes in response to the output of said first sensor means;
(e) a plurality of substantially planar insulating panels spaced interiorly from said second diffuser means, with each of said panels being pivotable about an axis passing through its center of gravity and being interconnected to move substantially in unison; and

(f) means for automatically controlling the inclination of said panels about their respective axes in response to the amount of solar radiation transmitted past said vanes, said means for controlling the inclination of said panels comprising second sensor means situated between said first and second diffuser means so as to be shaded by at least one of said vanes in direct proportion to the inclination of said vanes for sensing the amount of solar radiation transmitted past said vanes, and second actuator means operatively coupled to the output of said second sensor means and to said panels for pivoting said panels in response to the output of said second sensor means, whereby the amount of solar radiation transmitted through the window is controlled automatically.

4,279,241

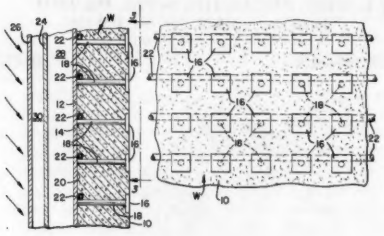
SOLAR HEAT ABSORBING AND RADIATING WALL

John W. Himes, P.O. Box 1617, Taos, N. Mex. 87571

Filed Nov. 29, 1979, Ser. No. 98,427

Int. Cl.³ F24J *3/02*; F28F *7/00*

U.S. Cl. 126—431 **5 Claims**



1. Building construction having at least one wall of concrete or like material with an inner surface and an outer surface comprising in combination therewith heat energy absorbing means in the form of at least one continuous relatively large metal plate disposed outwardly of said outer surface for absorbing solar heat energy; heat radiating means in the form of an array of relatively smaller metal plates disposed inwardly of said inner surface; and heat transfer means in the form of a plurality of solid metal rods, bars, or like members without openings therein extending through said wall; characterized in that said heat transfer means is in contact with both said heat energy absorbing means and said heat radiating means whereby solar heat energy absorbed by said heat absorbing means may be transferred therefrom by said heat transfer means to said heat radiating means to heat the interior of said building construction, and said wall is in actual or substantial abutment with both said heat energy absorbing means and said heat radiating means.

4,279,242

SOLAR COLLECTOR ASSEMBLY

Hans-Ulrich Bogatzki, Ferdinand-Hodler-Str. 24, Zürich, Switzerland

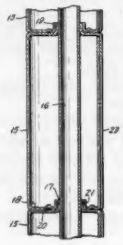
Continuation-in-part of Ser. No. 948,246, Oct. 3, 1978, Pat. No. 4,222,372. This application May 2, 1980, Ser. No. 146,023

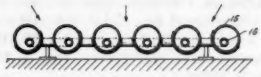
Claims priority, application Switzerland, Oct. 14, 1977, 012617/77

Int. Cl.³ F24J *3/02*; F28F *1/00*; B65D *21/00*

U.S. Cl. 126—443 **4 Claims**

1. A solar energy collector assembly comprising a plurality of individual collector cells mounted in series along a tube which carries a circulating heat transfer medium, each of said cells having a hollow cylindrical housing made from a material which is transparent to solar radiation capable of being absorbed by said heat transfer medium, said housing comprising a shell having a cylindrical wall and end walls respectively having first and second apertures both centered on a focal axis offset from the axis of said cylindrical walls, said end walls each carrying an annular flange extending axially in the same direction and surrounding the aperture of the end wall on which the flange is carried, said second aperture being of a size to admit the flange of the first aperture of another cell housing as well as a gasket fitting between the aperture-surrounding





flanges, said assembly including such a gasket between each pair of end-to-end adjacent cell housings, said cylindrical wall of each housing shell supporting a concave reflector of the shape of a cylinder parallel to said tube, disposed around said tube on the side of the cell which is in the direction of the offset of said focal axis with respect to said cylindrical wall axis and is open to the other side of the cell.

4,279,243

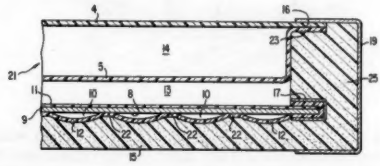
SOLAR COLLECTOR PANEL

David A. Deakin, 3163 Norfolk La., Falls Church, Va. 22042

Continuation-in-part of Ser. No. 851,372, Nov. 14, 1977, abandoned. This application Apr. 2, 1979, Ser. No. 26,184

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—450 **9 Claims**



1. A solar heating panel comprising

(a) a base constructed from a thermal insulating material,

(b) a solar radiation absorption plate mounted above said base,

(c) a hermetically sealed envelope formed from transparent polytetrafluoroethylene plastic film providing heat insulation for said solar radiation absorption plate and mounted thereabove,

(1) said envelope being filled with a stable, vapor phase halocarbon insulating gas which is chemically compatible with the plastic material of said envelope,

(2) said vapor phase insulating gas having a low thermal conductivity relative to air,

(d) said absorption plate having fluid conduits disposed immediately beneath said absorption plate,

(e) and means to deliver a heat transfer fluid through said fluid conduits.

9. A sealed envelope for use in a solar collector panel, said envelope having

(a) top and bottom panels made from a plastic material transparent to visible radiation with said panels being hermetically sealed as to form an insulating envelope means,

(b) and a stable, vapor phase halocarbon insulating gas which is chemically compatible with the plastic material of said envelope sealed within said envelope,

(1) said vapor phase insulating gas having a low thermal conductivity relative to air,

(c) said envelope means adapted to be placed so as to inhibit conduction and convection with respect to a heat absorbing surface in a solar collector panel.

4,279,244

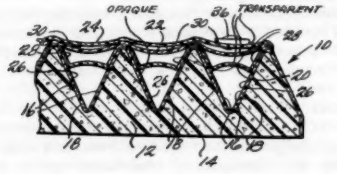
RADIANT ENERGY HEAT EXCHANGER SYSTEM

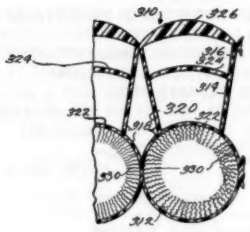
Roy E. McAlister, 5285 Red Rock North, Phoenix, Ariz. 85018

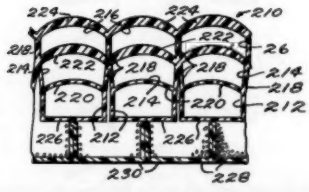
Continuation of Ser. No. 860,779, Dec. 15, 1977, abandoned, which is a continuation-in-part of Ser. No. 696,366, Jun. 15, 1976, abandoned. This application Nov. 30, 1979, Ser. No. 98,814

Int. Cl.[3] F24J *3/02*

U.S. Cl. 126—450 **66 Claims**







1. A radiant energy heat exchanger comprising:

a panel structure having sides of substantial area bounded by a thin periphery including opposed peripheral end portions, one of said sides being operable to face in a direction to receive radiant energy with the other side facing in opposed relation to said operable side, said panel structure including

a base defining the other side of said panel structure and having a multiplicity of transversely spaced barrier walls extending longitudinally between the end portions of said panel structure, each of said barrier walls including outer portions disposed outwardly in a direction toward the operable side of said panel structure and extending longitudinally between the end portions thereof, adjacent pairs of barrier walls defining in said base a multiplicity of side-by-side channels extending longitudinally between the end portions of said panel structure,

an inner sheet form wall section sealingly connected with each pair of adjacent barrier walls at positions along the outer portions thereof and extending transversely across the associated pair of adjacent barrier walls and longitudinally between the end portions of said panel structure so as to enclose the associated channel and thereby provide a plurality of inner fluid containing channel spaces extending longitudinally between the end portions of said panel structure,

an outer sheet form wall section sealingly connected with each pair of adjacent barrier walls at positions along the outer portions thereof and extending transversely across the associated pair of adjacent barrier walls outwardly of the associated inner wall section and longitudinally between the end portions of said panel structure, the exterior surfaces of said outer wall sections defining coextensive areas of the operable side of said panel structure,

means including said outer and inner wall sections defining a multiplicity of outer fluid containing spaces extending longitudinally between the end portions of said panel structure in outwardly disposed relation with respect to said multiplicity of inner fluid containing channel spaces.

said sheet form wall sections being constructed to facilitate the passage of radiant energy inwardly therethrough,

said base being constructed to retard the passage of radiant energy therethrough,

means for directing a flow of fluid through said inner fluid containing channel spaces from a position adjacent one end portion of said panel structure to a position adjacent the other end portion of said panel structure so that during the flow of said fluid radiant energy will be received thereby only after such radiant energy passes inwardly through said sheet form wall sections and said outer fluid containing spaces, and

selectively operable means for admitting a cooling fluid into the portions of said outer fluid containing spaces defined by said inner wall sections at a position adjacent one end portion of said panel structure and for allowing said cooling fluid to flow through said portions of said outer fluid containing spaces and outwardly thereof at a position adjacent the other end portion of said panel structure whereby overheating of said panel structure can be prevented in the event that the flow of fluid through said inner fluid containing channel spaces is stopped during a period in which said panel structure is receiving radiant energy of an intensity sufficient to effect such overheating.

4,279,245

FLEXIBLE TUBE

Takeji Takagi, Machida, and Kiyokazu Hosaka, Fuchu, both of Japan, assignors to Olympus Optical Co., Ltd., Japan

Filed Sep. 10, 1979, Ser. No. 73,712

Claims priority, application Japan, Dec. 19, 1978, 53/158766

Int. Cl.[2] A61B *1/00*

U.S. Cl. 128—004 **6 Claims**

1. A flexible endoscope tube comprising a tubular body of a crystalline polymer material having a porous microstructure

which include a number of micro-nodes which are coupled together by fibrils, and a synthetic resin material having water

or gas tightness and stretchability which is filled into the pores of the porous microstructure.

4,279,246

DEVICE FOR PREVENTING CLOUDING OF AN OBSERVING WINDOW

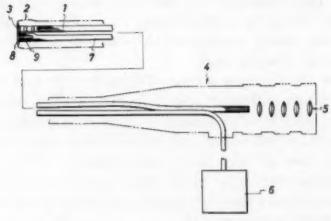
Toshio Chikama, Tokyo, Japan, assignor to Machida Endoscope Co., Ltd., Tokyo, Japan

Filed Jun. 1, 1979, Ser. No. 44,596

Claims priority, application Japan, Jun. 19, 1978, 53-082938[U]

Int. Cl.³ A61B *1/06*

U.S. Cl. 128—6 **8 Claims**



1. In an endoscope having a forward examining end including an observing window, an image transmitting optic bundle positioned to transmit an image at said forward end, an illuminating window, a light-transmitting optic bundle, and a light source optically aligned with said light-transmitting optic bundle, a portion of the light emitted from said source being directed through said illuminating window into the field of view of said observing window by way of said light transmitting optical bundle, converter means for converting light into heat, another portion of the light emitted from said source being directed into said converter means by way of said light transmitting optical bundle, said converter means being attached to said forward examining end in the region of said observing window such that the heat generated acts to warm said observing window and prevent clouding.

4,279,247

ENDOSCOPE HAVING A PLURALITY OF OPTICAL SYSTEMS EACH PROVIDED WITH AN IDENTIFICATION MARK ELEMENT

Kunio Kinoshita, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jul. 20, 1979, Ser. No. 59,333

Claims priority, application Japan, Jul. 27, 1978, 53/103250

Int. Cl.³ A61B *1/06*

U.S. Cl. 128—6 **9 Claims**

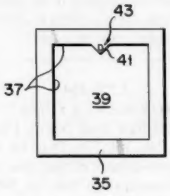
1. An endoscope having observation optical systems comprising:

an elongated sheath having two ends;

a distal end section connected to one of said ends of the sheath;

an operation section having two ends, one end being connected to the other end of the sheath;

two elongated observation optical systems extending through the sheath and each having two ends, one end being optically connected to the exterior of the endoscope at the distal end section, each of said observation optical systems having a field of view, one of said two observation optical systems being a front viewing observation optical system, and said other observation optical system being a lateral viewing optical system;



an ocular section disposed at the other end of the operation section and having an optical axis;

a rotatable observation optical system selecting section disposed between the operation section and the ocular section for selectively aligning the other end of the respective observation optical system with the optical axis of the ocular section; and

identification mark elements each disposed in the field of view of the corresponding observation optical system and having configurations so different from each other as to identify the corresponding observation optical system when viewed through the ocular section.

4,279,248

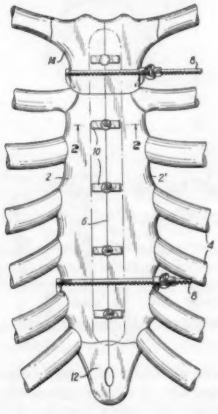
STERNUM CLOSURE DEVICE AND PROCEDURE FOR USING SAME

Shlomo Gabbay, 2433 Tiemann Ave., Bronx, N.Y. 10469

Filed Jul. 20, 1979, Ser. No. 59,364

Int. Cl.³ A61B *17/00*

U.S. Cl. 128—92 EA **11 Claims**



1. Sternum closure device adapted to tightly hold together the split halves of a sternum, comprising a generally longitudinally extending support of a length substantially equal to the length of the sternum to be closed, a plurality of longitudinally spaced, threaded rods extending downwardly from said sup-

port, clamping means having sharp-edged upwardly extending arms supported by the lower ends of said rods and adapted to be positioned beneath the sternum, a plurality of reverse clamps having sharp-edged downwardly extending arms, each of said clamps having an enlarged central opening for mounting said clamps with free vertical movement on the respective rods above the sternum, and a threaded nut on each rod between said clamps and said support, whereby downward movement of each nut forces its corresponding clamp toward said clamping means with the sternum in between, and urges the corresponding sharp edges of the clamping means and said clamps into the sternum to hold the sternum halves together.

4,279,249

NEW PROSTHESIS PARTS, THEIR PREPARATION AND THEIR APPLICATION

Michel Vert, Deville-les-Rouen; Francois Chabot, Rouen; Jean Leray, Sevres, and Pascal Christel, Paris, all of France, assignors to Agence Nationale de Valorisation de la Recherche (ANVAR) and Institut National de la Sante et de la Recherche Medicale, both of Neuilly-sur-Seine, France

Filed Oct. 17, 1979, Ser. No. 85,511

Claims priority, application France, Oct. 20, 1978, 78 29878

Int. Cl.[3] A61F *5/04*

U.S. Cl. 128—92 D **21 Claims**

1. An osteosynthesis part, in the shape of a three-dimensional solid, and made of a bio-compatible, absorbable polymer, comprises composite parts constituted by a matrix of polylactic acid or a copolymer thereof; said copolymer comprising at least 90% of units derived from lactic acid, said matrix containing a reinforcement element in the shape of fibers, threads, films, fabrics, or strands embedded therein and present in an amount of 5 to 50% by weight based on the total weight of the osteosynthesis part, said element being made of polyglycolic acid or a copolymer thereof, and containing optionally a charge capable of stimulating the absorption of the polymer for the benefit of a newly formed tissue.

4,279,250

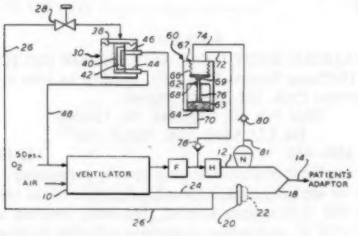
DRUG NEBULIZING SYSTEM FOR MEDICAL VENTILATORS OF THE VOLUME-LIMITED TYPE

James D. Valenta, Madison, and Kenneth T. Heruth, Sun Prairie, both of Wis., assignors to Airco, Inc., Montvale, N.J.

Division of Ser. No. 850,326, Nov. 10, 1977, Pat. No. 4,186,737. This application Sep. 14, 1979, Ser. No. 75,453

Int. Cl.[3] A61M *16/00*

U.S. Cl. 128—200.14 **3 Claims**



1. A method of operating a medical ventilator of the volume-limited type having a breathing circuit connecting the output of the ventilator to a patient for administering gas to the patient and having means to introduce medication into the breathing gas delivered to the patient without materially affecting the volume and oxygen concentration of the gas from the ventilator which comprises the steps of:

(a) withdrawing a predetermined discrete volume of gas from the main volume of gas being delivered by the ventilator to the patient in the breathing circuit,

(b) pressurizing the withdrawn discrete volume of gas,

(c) nebulizing the medication by the pressurized discrete volume of gas to form a mixture of nebulized medication in the discrete volume of gas, and

(d) returning the discrete volume of gas containing the nebulized medication to the breathing circuit for introduction to the patient with the main volume of gas from the ventilator.

4,279,251

TUBE FOR ENTERAL TREATMENT

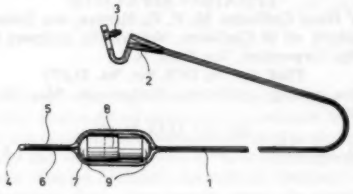
Heinz Rüsch, Waiblingen, Fed. Rep. of Germany, assignor to Willy Rusch GmbH & Co. KG, Kernen i.R., Fed. Rep. of Germany

Filed Jun. 5, 1979, Ser. No. 45,803

Claims priority, application Fed. Rep. of Germany, Jun. 7, 1978, 2824893

Int. Cl.[3] A61M *25/00*

U.S. Cl. 128—348 **9 Claims**



1. A device for introducing fluid into or aspiring fluid from the intestines of a person comprising:

elongated means for transmitting the fluid between a location at or near an opening in the head and the intestines, said elongated means including:

(a) an elongated tube adapted to be passed through an opening that passes from the head to the intestines, said tube having a forward introduction end for entering the intestines and a rear end located near the opening in the head when the forward introduction end is inside the intestines, said fluid passing through said tube between the rear end and the forward introduction end,

(b) capsule means for adding weight at or near said forward introduction end to promote movement of said forward introduction end towards the intestines when said tube is inserted into a person,

the improvement comprising:

said capsule means comprising means that is not soluble in the stomach, but is soluble in the intestines, so that the capsule means largely dissolves when, but not before, said capsule means reaches the intestines.

4,279,252

X-RAY SCALING CATHETER

Michael T. Martin, 607 N. Chippewa Apt. #151, Anaheim, Calif. 92801

Filed Aug. 24, 1979, Ser. No. 69,312

Int. Cl.[3] A61M *25/00*

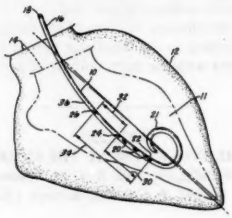
U.S. Cl. 128—349 R **8 Claims**

1. A catheter adapted for determining the magnification factor of an image produced by radiography including:

a tubular portion sized and adapted for insertion through a blood conduit in a living body; and

at least two indicia positioned along said tubular portion a predetermined distance apart, said indicia being constructed from material which is relatively radio-opaque with respect to the material from which said tubular portion is constructed so said at least two indicia can be observed in the image no matter what the relative radial orientation of said tubular portion and said at least two

indicia with respect to the radiation of the radiographic procedure wherein said indicia are rings of radio-opaque



material, when said tubular portion is in a linear orientation, said rings being parallel to each other.

4,279,253

EPILATION APPARATUS

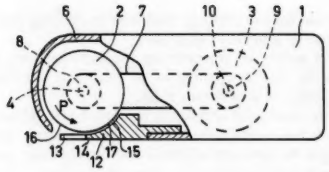
Freddy Haes; Guillaume M. P. G. Hermes, and Cornelis M. Reijnhout, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 19, 1979, Ser. No. 31,572

Claims priority, application Netherlands, May 16, 1978, 7805230

Int. Cl.³ A61B *17/00*

U.S. Cl. 128—355 **5 Claims**



1. An epilation apparatus comprising a single rotatable member having a hair-gripping wall; and a stationary complementary member having a wall confronting and spaced from the hair-gripping wall of the rotatable member to provide a hair gap therebetween, the rotation of the rotatable member relative to the complementary member being in a direction into the leading opening of the hair gap; said complementary member having a surface for sliding contact with the skin, the leading edge of said complementary member surface being knife-shaped and having a plurality of parallel fingers extending forwardly therefrom for catching hair therebetween and directing the same into said hair gap.

4,279,254

ULTRAVIOLET LIGHT CONTROL

Armando Boschetti, Bryan, Ohio, and David J. Snoek, Grand Rapids, Mich., assignors to Paul B. Elder Company, Bryan, Ohio

Filed Oct. 30, 1978, Ser. No. 956,202

Int. Cl.³ A61N *5/06*

U.S. Cl. 128—395 **14 Claims**

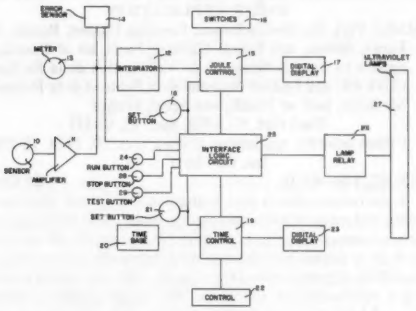
1. Apparatus for rendering more safe the exposure of the skin of a subject to ultraviolet light radiation, comprising means for monitoring the ultraviolet light radiation energy per unit area impinging upon the subject, and providing notification when a predetermined amount of energy per unit area has impinged upon the subject, said monitoring means comprising:

photoelectric means providing an analog electrical signal proportional to the intensity of the ultraviolet light which impinges thereon,

solid state integrated circuit signal converting means for converting the analog electrical signal from said photoelectric means to a digital electrical signal having a frequency proportional to the intensity of the analog electrical signal,

solid state integrated circuit counting means receiving said digital signal and counting the pulses of said signal to provide a measure of the total amount of ultraviolet energy received per unit area during a measured period of time, and

means operatively connected to said circuit counting means adapted to be set to the desired amount of radiation applied per unit area of the subject and to provide notification when the set amount of total energy per unit area has been attained,



wherein said apparatus includes one or more ultraviolet lamps and means for electrically energizing said lamps, wherein said photoelectric means is adapted to be mounted on the body of said subject, and which includes a control switch having associated digital display for setting the total amount of ultraviolet light radiation per unit area desired to be applied to the subject, said control switch being operatively connected to said counting means and being so operatively connected that counted pulses of said counting means gradually reduces the reading on the display to indicate the total amount of energy per unit area still remaining to be applied, means for generating an electrical signal when the reading on said display reaches zero, and means actuated by said latter electrical signal adapted to turn off said ultraviolet lamps.

4,279,255

LOCALIZED BODY HEAT APPLICATOR DEVICE

John C. Hoffman, Severna Park, Md., assignor to John F. Taylor, Severna Park, Md., a part interest

Filed Feb. 26, 1980, Ser. No. 124,940

Int. Cl.³ A61F *7/00;* **H05B** *3/06*

U.S. Cl. 128—402 **12 Claims**

1. A portable therapeutic heating device, comprising

means for applying heat to a localized portion of the body so that the skin temperature of that body reaches about 102°–108° F., said means comprising a flexible heating unit having a plurality of distinct sets of electric resistance heating elements associated therewith;

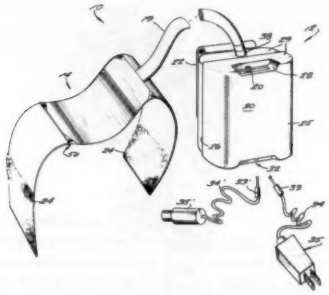
a battery pack adapted to receive at least one battery;

electrical interconnection means for operatively electrically interconnecting a battery received in said battery pack to said heat applying means electric resistance heating elements sets, said electrical interconnection means being dimensioned so that said heat applying means may be positioned on body parts remote from the center of gravity of the body while the battery pack is mounted approximately at the body center of gravity;

selector switch means operatively associated with said elec-

trical connection means and attached to said battery pack for selecting which of said sets of electric resistance heating elements will be energized by a battery received by said battery pack to thereby vary the amount of heat applied by said heating means to a body part;

means for providing for ready attachment of said battery



pack to the approximate center of gravity of one's body; and

means for providing for ready attachment of said heat applying means to a body part in therapeutic heat application association therewith so that the skin temperature of the body part can be elevated to about 102°–108° F. by said heating means.

4,279,256

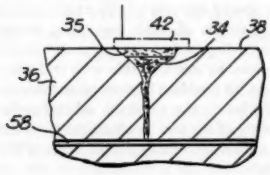
NERVE STIMULATION METHOD

Louis Bucalo, 155 Roberts St., Holbrook, N.Y. 11741

Continuation of Ser. No. 756,970, Jan. 5, 1977, abandoned, which is a division of Ser. No. 513,295, Oct. 9, 1974, Pat. No. 4,005,699. This application Apr. 20, 1979, Ser. No. 31,982

Int. Cl.³ A61N *1/36*

U.S. Cl. 128—419 R **2 Claims**



1. In a method for stimulating a nerve, the steps of injecting into body tissue in a suitable carrier a plurality of electrically conductive particles extending from a nerve which is to be stimulated to the region of the outer skin to form a direct electrically conductive path from a point within the skin to a nerve to be stimulated, and thereafter when it is desired to stimulate the nerve situating an electrode at the skin in line with the electrically conductive particles, and transmitting electrical energy through said electrode and said electrically conductive particles to said nerve so as to stimulate the latter.

4,279,257

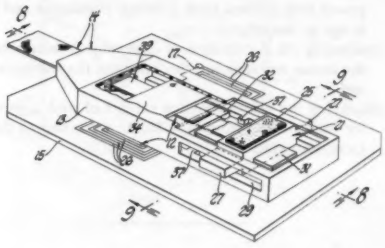
ELECTROMAGNETIC FIELD RESPONDER FOR RESPIRATION MONITORING

Peter A. Hochstein, 14020 Fifteen Mile Rd., Sterling Heights, Mich. 48077

Continuation-in-part of Ser. No. 783,168, Mar. 31, 1977, abandoned, which is a continuation-in-part of Ser. No. 598,934, Jul. 25, 1975, abandoned. This application Sep. 27, 1979, Ser. No. 79,457

Int. Cl.³ A61B *5/08*

U.S. Cl. 128—722 **7 Claims**



1. An assembly for responding to an electromagnetic field comprising; passive circuit means having a resonant frequency variable in a predetermined frequency range of an electromagnetic field and being responsive to the electromagnetic field when said resonant frequency matches the frequency of the electromagnetic field, force transfer means for transferring forces from an object to said passive circuit means to vary said resonant frequency in said range so that said passive circuit means responds to the frequency of the electromagnetic field, said force transfer means including a body, said passive circuit means including at least one movable element movably supported by said body to vary said resonant frequency, said force transfer means further including force reaction means connected to said body and to said movable element for moving said movable element in a first direction relative to said body in response to the forces from the object, said force reaction means including slip clutch means for allowing lost motion between said force reaction means and said movable element after a predetermined amount of movement of said movable element.

4,279,258

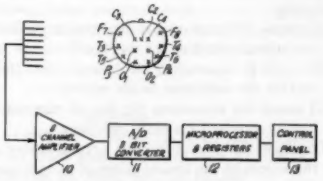
RAPID AUTOMATIC ELECTROENCEPHALOGRAPHIC EVALUATION

E. Roy John, 930 Greacen La., Mamaroneck, N.Y. 10546

Filed Mar. 26, 1980, Ser. No. 134,309

Int. Cl.³ A61B *5/04*

U.S. Cl. 128—731 **11 Claims**



4. A method in electroencephalography for testing subjects to determine organic brain dysfunction by diffuse or local shifts in the EEG spectrum, the method comprising:

removably securing a plurality of electrodes to the head of said subject under test, providing multiple channels of

information with each channel being from a different head region;

amplifying the on-going signals representing brain waves from each of said head regions while the subject sits relaxed with a minimum of external stimuli;

converting the said amplifier signals into digital form;

dividing the digital form brain wave signals into a plurality of frequency bands; computing the power in each of said frequency bands to provide frequency band relative (%) power; automatically comparing said relative power in each frequency band with a set of normative relative power data derived from a normal population and related in age to the subject;

computing the Z-transform of each subject value relative to the means and standard deviations of the normative data; and

displaying the results for each subject of such computation for each of said frequency bands according to the head locations tested.

4,279,259

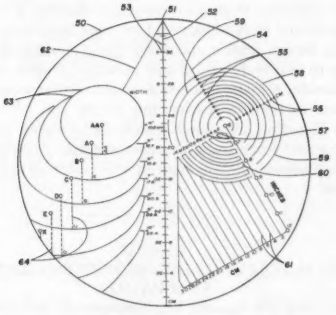
MAMMOMETER

Denis C. Lee, Ann Arbor, and Arthur H. Rathjen, Midland, both of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Continuation-in-part of Ser. No. 702,657, Jul. 6, 1976, abandoned. This application Jul. 28, 1977, Ser. No. 819,735

Int. Cl.³ A61B *5/10*

U.S. Cl. 128—774 **5 Claims**



1. An article of manufacture useful for making measurements of and relative to mammary glands, said article comprising a planar substrate of a transparent material, said planar substrate containing

(A) means for measuring distances along a line running from the sternal notch to the umbilicus;

(B) means for measuring the distance from the sternal notch and/or the umbilicus to the nipple;

(C) means for measuring the size of mammary glands relative to standard brassiere cup sizes;

(D) means for measuring the perpendicular distance from the nipple to the lowest point of a mammary gland, relative to mammary glands of typical sizes;

(E) means for measuring distances concentrically from the nipple, which means is also useful for measuring and selecting the appropriate size mammary prosthesis; and

(F) means for locating and assisting in placing guideline marks preparatory to surgery on a mammary gland.

4,279,260

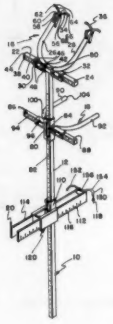
OCCLUSAL INSTRUMENT

Lee K. Stump, 2314 K St., Belleville, Kans. 66935

Filed Sep. 28, 1979, Ser. No. 79,791

Int. Cl.³ A61B *5/10*

U.S. Cl. 128—774 **8 Claims**



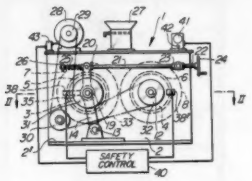
1. In an occlusal instrument, an upstanding elongated standard adapted to be positioned in spaced relation at the front of and in the medial plane of a patient's head, said standard carrying orienting means adapted to engage spaced regions of the patient's face, said orienting means comprising uppermost, intermediate and lowermost measuring means mounted on the standard for movement relative to each other in the direction of the longitudinal extent of the standard, a first indicia means for enabling reading of the relative positions of the uppermost, intermediate and lowermost measuring means along the extent of the standard whereby such relative positions can be replicated, each of said measuring means extending rearwardly from the standard and terminating in patient contacting means, at least one of said measuring means being provided with means for varying the rearward extent and the spacing of its contacting means from the standard, a second indicia means for enabling replication of the extent of said one measuring means, and at least one of the other measuring means including a pair of horizontally spaced and rearwardly extending arms with the face contacting means of such measuring means including symmetrical parts disposed at the rearmost extremities of the arms, means carried by and movable with said one of the other measuring means for enabling horizontal and lateral movement of the arms relative to the standard, whereby the horizontal and lateral spacing of the said symmetrical parts can be varied, a third indicia means for enabling replication of the horizontal and lateral positions of the arms relative to the standard, said one measuring means comprising a slide for vertical movement on the standard, with said slide including a resilient element resiliently bearing against the standard in an arrangement such that friction therebetween opposes such vertical movement thereby releasably retaining the slide in a selected vertical position, said one measuring means including a pair of elongated and rearwardly extending parallel rails that are joined at their rearmost extremities by the patient contacting means of such means, said rails being disposed on opposite sides of the standard, with said slide having a pair of openings therethrough on opposite sides of the standard that slidably and guidingly receive the rails therethrough.

4,279,261

AUTOMATIC SAFETY DEVICE FOR HULLING MACHINE

Toshihiko Satake, Higashihiroshima, Japan, assignor to Satake Engineering Co., Ltd., Tokyo, Japan

Filed Oct. 12, 1979, Ser. No. 84,425
Int. Cl.³ B02B 3/04
U.S. Cl. 130—5 B **17 Claims**



1. The combination comprising:

a hulling machine comprising a housing, a pair of hulling rolls arranged parallel to each other in said housing and each having a metallic annular member and a resilient annular member fitted over said metallic member, a fixed rotary main shaft supporting one of said pair of hulling rolls and mounted in said housing for rotation about a fixed center axis, a movable rotary ancillary shaft supporting the other hulling roll and rotatably supported by an arm pivotally supported by a support shaft mounted in the housing in spaced apart parallel relation to a fixed center axis of said fixed rotary main shaft so that the movable rotary ancillary shaft can be moved toward and away from the fixed rotary main shaft while being maintained in parallel thereto, means for driving said fixed rotary main shaft and said movable rotary ancillary shaft, and means for forcing the movable rotary ancillary shaft to move toward the fixed rotary main shaft; and

an automatic safety device comprising detecting means for detecting wear of at least one of the resilient annular members fitted over said metallic members of said hulling rolls progressing to such a degree that a predetermined wear limit radius has been reached, and a safety control electric circuit connected to said detecting means.

4,279,262

HAIR TREATING AGENT OF THE PRE-SHAMPOO TYPE

Shoji Horin, Sakatashi; Shizuo Hayashi, Sugitomachi, and Takeo Okumura, Sakurashi, all of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 511,588, Oct. 3, 1974, abandoned. This application Jul. 26, 1976, Ser. No. 708,357
Int. Cl.³ A45D 19/00; A61K 7/06
U.S. Cl. 132—7 **7 Claims**

1. A method of treating human hair which comprises applying to dry human hair an effective amount of the oil-in-water emulsion consisting essentially of

from 35 to 75 percent by weight of water, as the continuous phase,

from 5 to 40 percent by weight of liquid lanolin, as the discontinuous phase, said liquid lanolin being liquid at about 20° C.,

from one to 10 percent by weight of a cosmetic emulsifier selected from the group consisting of anionic organic surfactants, nonionic organic surfactants and mixtures thereof, effective to maintain in a stable condition the oil-in-water emulsion of said liquid lanolin in the water,

so as to coat the hair substantially uniformly with said emulsion whereby said liquid lanolin penetrates into the hair, and

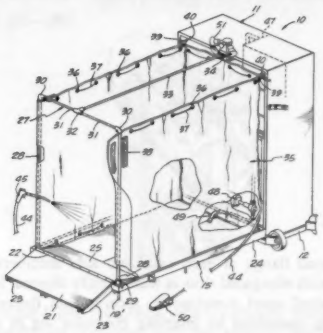
then shampooing and drying the hair.

4,279,263

CLEANING APPARATUS

William D. Pulliam, 15710 Rosalita Dr., La Mirada, Calif. 90638

Filed Dec. 5, 1979, Ser. No. 100,369
Int. Cl.³ B08B 3/02; B60S 3/04
U.S. Cl. 134—111 **8 Claims**



1. Apparatus for washing shopping carts or the like, comprising in combination:

a housing including top wall, bottom wall, back wall and two side walls forming an upstanding enclosure with an open side;

a door pivotally interconnected to the housing bottom wall for swinging movement from a first position enclosing the housing open side to a second position resting on a substantially horizontal ground plane;

pedestal means on the outwardly directed surface of the door for restingly supporting the outermost end of said door higher with respect to the ground plane than those parts of said door immediately adjacent the housing;

upstanding side walls integrally related to the peripheral edges of said door forming an upwardly facing panlike means when said door rests on the ground plane in which panlike means shopping carts are received during washing;

tank means within said housing containing a supply of a cleaning liquid;

first pump means in said housing interconnected with said tank means for pressurizing the cleaning liquid therefrom;

filter and storage means located in said housing;

frame means removably mounted on said panlike means;

flexible sheetlike means mounted onto said frame means forming side walls and a back wall substantially covering said housing opening;

flexible hose and nozzle means interconnected with said first pump means for providing a pressurized supply of cleaning liquid into the panlike means for cleaning the shopping carts; and

a second pumping means in communication with the panlike means and filter and storage means for moving cleaning liquid from said panlike means to said filter and storage means.

4,279,264

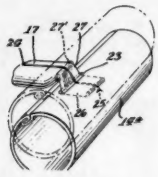
CANOPY SUPPORT FOR BEDS AND METHOD

Kenneth H. Gutner, 3285 Dato, Highland Park, Ill. 60035

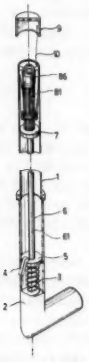
Filed Jan. 28, 1980, Ser. No. 115,947
Int. Cl.³ A47C 29/00
U.S. Cl. 135—5.1 **5 Claims**

1. A lightweight rugged canopy frame for a bed comprising a pair of side members and a plurality of transverse members all constructed of tubular metal, said side members each including a pair of end connected sections, each pair of sections when

connected forming an arch midway of the length thereof, said transverse members including a pair of end members, said side and end members being equipped with openings adjacent the ends thereof for connection to the bedposts, said transverse members also including a plurality of intermediate members each formed into a tube with a butt seam, said intermediate members being crimped at the ends thereof to provide a generally L-shaped flange at each end, said side members being equipped with elongated slots in transversely aligned, longitudinally spaced apart positions to receive said flanges, said frame being assembled by inserting the outer leg of said L-shape into an associated slot and thereafter rotating the said side member section to insert the inner leg of said L-shape in said slot whereby said outer legs cooperate to lock said frame in arch providing attitude.

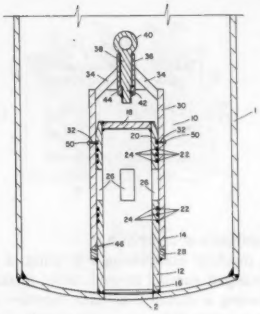


4,279,265
UMBRELLA
An-Teh Tseng, 188, Tungmen St., Hsinchu City, Taiwan
Filed Apr. 7, 1980, Ser. No. 138,155
Claims priority, application Taiwan,
Int. Cl.[3] A45B *25/28*
U.S. Cl. 135—48 **6 Claims**



1. An umbrella comprises:
a handle having a generally compressed spring therein;
means mounted on said handle for controlling said spring;
a hollow stick member connected with said handle and having a movable cap provided at the top end thereof, and a supporting device mounted slidably on a water collecting device provided generally within the upper portion thereof;
movable connecting means for connecting said spring with said water collecting device, said water collecting device and said supporting device to protrude out of the top end of said stick member by extension of said spring when said spring is released by said means.

4,279,266
SLEEVE VALVE
Lloyd C. Knox, and Robert B. Nickles, Jr., both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.
Filed Apr. 23, 1980, Ser. No. 142,926
Int. Cl.[3] F16K *13/04*
U.S. Cl. 137—68 R **5 Claims**

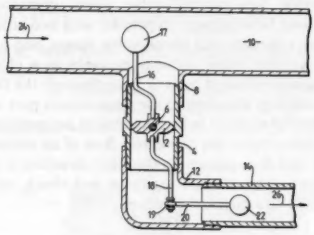


1. In combination, a tank having an opening therein and a sleeve valve means installed within said tank, said sleeve valve means comprising:
central body means installed within said tank surrounding the opening therein, said central body means including:
an elongated cylindrical body member having one end secured to said tank surrounding the opening therein, having the other end thereof sealed by circular plug means, having annular recess means in the outer surface thereof, having a plurality of apertures therein, having first annular seal means located on one side of the plurality of apertures, and having second annular seal means located on the other side of the plurality of apertures;
sleeve means installed over said central body means sealingly engaging the outer surface thereof, said sleeve means including:
elongated cylindrical body means having a plurality of apertures therein, having strut means having one end thereof secured to the elongated cylindrical body means, having central sleeve means secured to the other end of the strut means, and having attachment means secured to the central sleeve means; and
shear type fastening means extending through the apertures in said sleeve means having a portion thereof engaging the annular recess means in said central body member thereby securing said sleeve means to said central body member.

4,279,267
FLUID FLOW PROPORTIONING DEVICE
Dan Bron, 36 Palmach St., Haifa, Israel
Filed Oct. 26, 1979, Ser. No. 88,517
Claims priority, application Israel, Nov. 12, 1978, 55925
Int. Cl.[3] G05D *11/03*
U.S. Cl. 137—100 **4 Claims**

1. Proportioning device for connection to a main line carrying a pressurized fluid, for the purpose of introducing into or drawing from said main line a fluid at a rate standing in a substantially constant proportion to the flow rate of said main line, said device comprising a housing, at least one opening of which is connected to said main line and another opening of which is connected to the proportioning branch line, further comprising a valve arranged in said housing and capable of closing the passage of said fluid into and from said proportioning branch line, which valve is mechanically linked to two drag bodies, respectively located on two opposite sides of said valve, the first one of which drag bodies is located in the flow path of the main line, the second one in the flow path leading

to the proportioning branch line, to such effect that the drag force acting on said first drag body tends to open said valve and thus to increase the flow through said proportioning



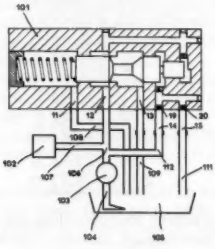
branch, while the drag force acting on said second drag body tends to close said valve and thus to reduce the flow through said proportioning branch.

4,279,268

MULTI-LEVEL PRESSURE REGULATING VALVE

Paul Aubert, Clamart, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Sep. 28, 1979, Ser. No. 79,921
Claims priority, application France, Sep. 29, 1978, 78 27977
Int. Cl.[3] G05D *16/10*
U.S. Cl. 137—115 **13 Claims**



1. A multilevel pressure regulating valve for a hydraulic control circuit, comprising

a valve body having a first end chamber and a second end chamber, a feed chamber connected by a conduit to said second end chamber, and an intermediate chamber,

a reservoir for hydraulic fluid,

feed means for feeding fluid from said reservoir to said feed chamber,

a central spool slidably mounted in said body,

resilient means in said first end chamber compressed between said body and one end of said spool first urging said spool to a position throttling the feed fluid exiting from said feed chamber and for returning some of said fluid to a said reservoir,

a small piston in said second end chamber of said body acting on the other end of said spool, and

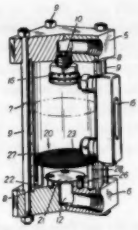
two parallel ducts, each having its own throttling nozzle, connecting said intermediate chamber to said reservoir.

4,279,269

LIQUID FLOW CONTROL MEANS FOR GAS-LIQUID RECEPTACLE

Richard R. Schink, Racine, and Thomas A. Craig, Menomonee Falls, both of Wis., assignors to Milwaukee Cylinder Corporation, Cudahy, Wis.

Filed Nov. 21, 1979, Ser. No. 96,381
Int. Cl.[3] F15B *1/04*
U.S. Cl. 137—206 **5 Claims**



1. In a gas-liquid receptacle which normally contains liquid and pressure gas in contact with one another, said receptacle having a substantially flat bottom wall wherein there is a liquid port through which liquid can flow into and out of the receptacle, a top wall wherein there is a gas port through which pressure gas can flow into and out of the receptacle, and a side wall which extends between said top and bottom walls and is substantially coaxial with said liquid port,

liquid flow control means for preventing foam generation upon high velocity entry of liquid into the receptacle through said liquid port, said liquid flow control means comprising:

A. a baffle plate substantially centered over said liquid port, said baffle plate

(1) being substantially parallel to said bottom wall and spaced thereabove by a height distance substantially smaller than the diameter of said liquid port, and

(2) being at least large enough to extend across the entire area of said liquid port but small enough to be substantially spaced from said side wall all around the same; and

B. a screen in said receptacle

(1) spaced above said baffle plate by a distance at least substantially equal to said height distance but being below the lowest normally expectable level of liquid in the receptacle, and

(2) extending substantially entirely across the receptacle with its edge closely adjacent to said side wall all around the same.

4,279,270

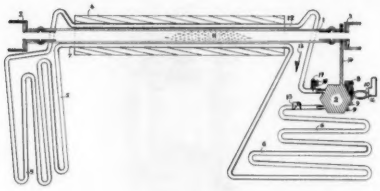
FLEXIBLE ANTIFREEZE HEATCONDUCTOR LIQUID TRANSFER CONNECTOR HOSE

William T. Francis, Jr., 2005A S. Semoran Blvd., Orlando, Fla. 32807, assignor to William T. Francis, Jr., Spruce Pine, N.C.

Filed Apr. 22, 1980, Ser. No. 142,646
Int. Cl.[3] F16K *49/00*; F16L *53/00*; F28F *1/10*
U.S. Cl. 137—340 **1 Claim**

1. A flexible primary liquid transfer hose unit at each end equipped with suitable couplings, wherein said transfer hose has affixed along its side two antifreeze hoses, wherein one constitutes a supply line, and the other of said two hoses a return line each hose at each end terminating in an overlap appendix loop hose connection joining aforesaid respective supply and return hose ends at each respective end of the primary liquid transfer hose unit, wherein also at suitable locations built into the thusly existing antifreeze hose closed circuit system are an electric waterpump, a thermostat relay unit which upon a drop of antifreeze temperature below a predetermined degree causes aforesaid waterpump to be switched on in phased sequence, furtherwherein also built into aforementioned antifreeze closed circuit system at suitable locations are

an antifreeze heater unit, a pressure relief valve, a means to refill and top off such antifreeze closed circuit system together with adequate electric wiring system, furtherwherein also aforesaid primary liquid transfer hose unit together with its thereto attached antifreeze hoses is packed in and surrounded with adequate insulation for the purpose of keeping the primary transfer liquid from becoming unmanageable due to the effect of freezing weather, also wherein further aforementioned overlap appendix antifreeze hose loop sections together with added insulating material are usuable for freeze protection of both primary liquid main supply pipe stem and primary liquid receiver pipe stem, whereinfurther the operation of said freeze protection system functions by pumping heated antifreeze liquid through the antifreeze closed circuit in conjunction with the controlled temperature means of the antifreeze pump and heating system.

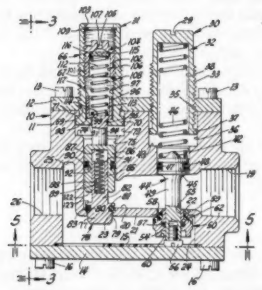


4,279,271

PRESSURE REGULATOR AND FLOW CONTROL VALVE WITH PRE-EXHAUST

James A. Neff, Bloomfield Township, Oakland County, Mich., assignor to Mac Valves, Inc., Wixom, Mich.

Filed Aug. 31, 1979, Ser. No. 71,735
Int. Cl.[3] G05D *7/01, 16/10*
U.S. Cl. 137—493.8 **14 Claims**



1. A combination pressure regulating and flow control air valve, for controlling the flow of pressurized air through a flow circuit which includes a pneumatically controlled apparatus, characterized in that the valve includes:

(a) a valve body having an upstream pressurized air supply port for connection to a source of pressurized air, and a downstream working port for connection to a pneumatically controlled apparatus in said flow circuit, and a flow passage interconnecting said ports;

(b) an adjustable pressure regulator and check valve means operatively mounted in said flow passage which includes a movable valve stem member with a regulator and check valve element slidably mounted on the valve stem member and movable on the valve stem member between open and closed positions to provide a regulated downstream pressure at the downstream working port when pressurized air is flowing from the source of pressurized air into the upstream port and through the flow passage in one direction to the downstream port, and said regulator and check valve element closes to a checked position when the downstream pressure reaches a predetermined reduced level; and,

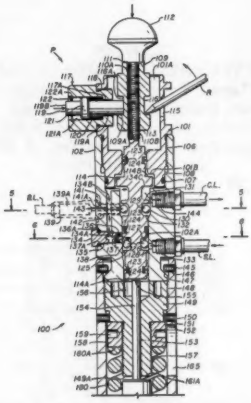
(c) an adjustable flow control valve means operatively mounted in said flow passage, in parallel with said adjustable pressure regulator and check valve means, and having a flow control valve element movable to a closed position when pressurized air is flowing through the flow passage in said one direction to the downstream port and said flow control element being movable to an open position to provide a meter out action to a flow of air exhausting through said flow passage in the other direction to the upstream port and with said regulator and check valve element closed in a checked position.

4,279,272

FLOW LINE MONITOR PILOT VALVE ASSEMBLY

Neil H. Akkerman; Stephen R. Foster, and Kip B. Goans, all of New Orleans, La., assignors to Baker CAC, Inc., Belle Chasse, La.

Continuation of Ser. No. 944,230, Sep. 20, 1978, abandoned, which is a division of Ser. No. 841,940, Oct. 13, 1977, Pat. No. 4,160,463. This application Aug. 13, 1979, Ser. No. 66,152
Int. Cl.[3] F15B *13/042*
U.S. Cl. 137—596.18 **2 Claims**



1. In a valve assembly for controlling one of pneumatic and hydraulic fluid therethrough, said valve assembly comprising a housing, spherical means defining a plurality of valve heads, valve seat means in said housing for transmission of said fluid and for selective sealing engagement with said valve heads, and spool means shiftable in one of linear and rotational directions within said housing immediate said valve heads and not constrained against the other of linear and rotational directions, said spool means being operably associatable with said valve seat means and said valve heads to permit selective movement of said valve heads to said seat means and selective engagement of said head and seat means upon only one of linear and rotational shifting of said spool means, the selective engagement of said head and seat means being sealingly insensitive to the other of linear and rotational shifting of said spool means, said spool means defining at least one camway for housing of said valve head means and for rotational travel of said valve head means within and around said spool means, the improvement comprising: a control shaft selectively contacting said spool means for shuttling said spool means to one of first and second positions; and piston head means carried exteriorly around said shaft and responsive to predetermined pres-

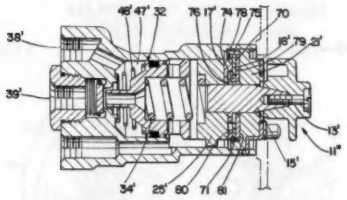
sure variation of a monitored fluid for shifting of said shaft to shuttle said spool means.

4,279,273

CLUTCH RETENTION FEATURE OF A HAND CONTROL VALVE

Leon R. Acre, Ovid, Mich., assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed Feb. 4, 1980, Ser. No. 118,617
Int. Cl.³ F16K *11/00, 31/00*
U.S. Cl. 137—627.5 **4 Claims**



1. A hand control valve, comprising:
(a) a stationary member having an opening extending therethrough, the member having a flat, annular friction surface surrounding the opening;
(b) a rotary member which extends through the opening in the stationary member and which is rotatable, by hand, the rotary member including a flat, annular friction surface which is in confronting spaced relation from the friction surface of the stationary member;
(c) means biasing said rotary member toward said stationary member;
(d) at least one pair of annular friction plates disposed between the friction surfaces of the stationary and rotary members, the friction plates, when compressed against each other and the stationary and rotary members, providing frictional resistance to rotation of the rotary member, each friction plate having a pair of parallel, flat, annular friction surfaces for engaging adjacent flat friction surfaces of a plate and member;
(e) means for keying one of the pair of friction plates to the stationary member for limited rotational movement relative thereto; and
(f) means for keying the other of the pair of friction plates to the rotary member for limited rotational movement relative thereto;
(g) valving means coacting with means on said rotary member and movable toward and away from said stationary member in response to rotation of said rotary member.

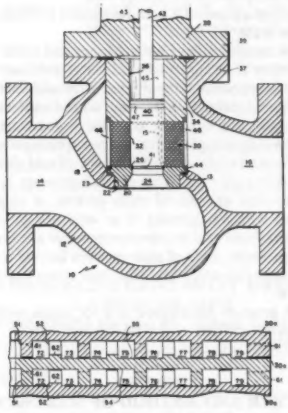
4,279,274

FLUID CONTROL DEVICE WITH DISC-TYPE FLOW RESTRICTOR

Fritz O. Seger, Fairview, Pa., assignor to Copes-Vulcan, Inc., Lake City, Pa.

Division of Ser. No. 837,871, Sep. 29, 1977, Pat. No. 4,221,037, which is a continuation of Ser. No. 641,544, Dec. 17, 1975, abandoned, which is a continuation-in-part of Ser. No. 415,828, Nov. 14, 1973, abandoned. This application Nov. 19, 1979, Ser. No. 95,618
Int. Cl.³ F15D *1/02*
U.S. Cl. 138—42 **8 Claims**

1. In a fluid flow restrictor for incorporation in a valve or the like, and of the type comprising a series of axially aligned and stacked discs forming an annular restrictor and providing a multiple of series-parallel flow paths between the inside and outside of the assembled disc stack to effect pressure drop and energy dissipation, said series flow paths comprising radially disposed slot-like openings formed on said discs and said parallel flow paths comprising annular passage-forming means formed on said discs and providing fluid communication between sets of said series flow paths, the improvement characterized by
(a) said discs being formed with a plurality of radially spaced annular baffle-forming ribs projecting axially from each face thereof,
(b) adjacent ribs of each disc forming annular recesses of substantially greater radial width than the radial thickness of said ribs,
(c) said discs having on each face thereof a plurality of radially-extending slots formed through said annular baffle-forming ribs,
(d) said radially-extending slots being arranged and configured whereby the slots of each rib of a disc are radially aligned with the slots of each adjacent rib of said disc to form a plurality of radially-aligned slots extending from the inner perimeter of said disc to the outer perimeter of said disc,



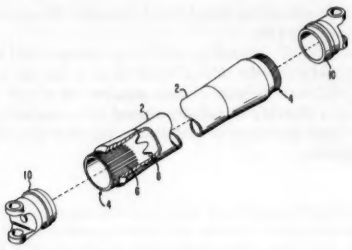
(e) the ribs on opposed faces of adjacent discs in the stack being offset whereby in the assembled stack the annular ribs of one disc are received in the annular recesses of the other adjacent disc,
(f) the ribs and recesses being of substantially equal height whereby interfitting sets of ribs define annular flow passages,
(g) said radially-disposed slots each including an open side,
(h) each of said open sides being substantially sealed by the confronting face of an annular recess of an adjacent disc in the assembled stack,
(i) said discs when assembled in said stack being so mutually oriented that the radially-aligned slots of the ribs on one side of a disc are offset from the radially-aligned slots of the interfitting ribs on the confronting side of the adjacent disc to interpose an annular rib of said adjacent disc between each pair of radially-aligned slots of said disc thereby providing said plurality of series-parallel flow paths between the inside and outside of the assembled disc stack.

4,279,275

MECHANICAL JOINDER OF COMPOSITE SHAFT TO METALLIC END MEMBERS

Jay W. Stanwood, Long Beach; William A. Clarke, Irvine, and Johannes MacLeane, Chino, all of Calif., assignors to Ford Aerospace & Communications Corporation, Detroit, Mich.

Filed Aug. 6, 1979, Ser. No. 64,300
Int. Cl.³ F16L *47/02*
U.S. Cl. 138—109 **6 Claims**



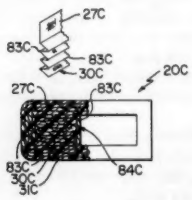
1. A metal/composite joint comprising:
an outer hollow cylindrical tube fabricated of fiber-adhesive composite material;
a cylindrical metallic sleeve having inner and outer ends and fitting within a terminus of said outer tube so that said outer end is approximately aligned with said terminus and said inner end extends part way within said tube, with high shear friction between said sleeve and tube;
said sleeve having a single series of several elongated parallel grooves formed in the outer periphery of said sleeve in the vicinity of its outer end wherein said grooves are closely spaced, so that an end of each groove is substantially continuous with a beginning of an adjacent groove;
wherein fibers from said composite material are compacted into said grooves, each of said grooves having a radius of between approximately one and four times the radius of said fibers;
wherein the grooves are aligned at a 45° angle with respect to the axis of rotation of the sleeve and tube.

4,279,276

LOOP PICKER AND METHOD OF MAKING SAME

G. Brian Hetz, Springfield, Mo., assignor to Dayco Corporation, Dayton, Ohio

Filed Sep. 26, 1979, Ser. No. 79,124
Int. Cl.³ D03D *49/36*
U.S. Cl. 139—159 **4 Claims**



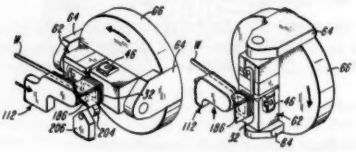
1. In a loop picker having a forward block and a body with a picker stick receiving passage extending therethrough, the improvement in which said block and said body are constructed of a single, continuous strip of laminated fabric having a coating of a polymeric material on at least one surface therof, said polymeric material serving to bond adjoining portions of said strip, said single strip having a pleated forward portion and a trailing portion, wherein said pleated portion defines said block and consists of a plurality of alternatingly disposed folds of substantially equal size, said folds being disposed in the forward and rear segments of said block, and wherein said trailing portion is disposed in wound relation to define said body, said trailing portion having an innermost turn which defines the major portion of the inside surface of said passage.

4,279,277

APPARATUS FOR MANUFACTURING A DYNAMOLELECTRIC FIELD MEMBER

Kenneth E. Peck, Jr., Pittsboro, N.C., and Harold I. Pearsall, Centerville, Ohio, assignors to The Globe Tool & Engineering Company, Dayton, Ohio

Filed Sep. 13, 1979, Ser. No. 75,315
Int. Cl.³ B21F *3/00, 23/00*
U.S. Cl. 140—92.2 **4 Claims**



1. In apparatus for manufacturing dynamoelectric windings having plural coils and continuous transition portions extending uninterruptedly between the coils, said apparatus being of the type comprising a mandrel having a major axis and a plurality of core pieces spaced about said major axis, means for rotating said mandrel about said major axis to selectively present said core pieces to a winding station, means for edge winding strapping about that core piece then presented at said winding station including means for rotating said mandrel about a second axis inclined from said major axis for drawing said strapping from a source of strapping to edge bend said strapping to form a coil about the one of said core pieces present at said winding station, the improvement comprising
a wire feed and guide assembly for guiding strapping from said source of strapping to said mandrel at said winding station,
said assembly having a wire forming head through which said strapping extends to the winding station constructed and operable to supply strapping to said winding station and cooperate with said means for rotating said mandrel about said second axis for edge bending said strapping to form coils on said core pieces, and said assembly including means for moving said wire forming head both vertically and horizontally for cooperating with said means for rotating said mandrel about said second axis to edge bend transition strapping portions after the winding of a coil on one of said core pieces and before the winding of the next coil on another of said core pieces.

4,279,278

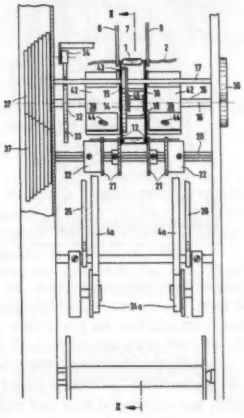
APPARATUS FOR STRINGING ELECTRICAL COMPONENTS HAVING TWO ALIGNED CONNECTING WIRES INTO A BELT

Thomas Weresch, Greschbachstr. 19, D-7500 Karlsruhe 41, Fed. Rep. of Germany

Filed Mar. 8, 1979, Ser. No. 18,502
Claims priority, application Fed. Rep. of Germany, Mar. 25, 1978, 2813100
Int. Cl.³ B21F *1/02*; B65B *13/02*
U.S. Cl. 140—147 **12 Claims**

1. Apparatus for stringing electrical components having two aligned connecting wires into a continuous belt in which, for each of said wires of each such component, two adhesive tapes secure the connecting wires of successive components between themselves, said apparatus comprising two transporting

toothed wheels which are arranged coaxially with a spacing between them to accommodate said components while receiving said connecting wires in tooth gaps, first and second pairs of rollers each including a guide roller and a pressure roller drivingly connected to a respective one of said transporting toothed wheels, and a component feed arrangement comprising two transfer discs which are arranged coaxially and with spacing between them and are provided with peripheral reception slots for receiving said connecting wires, driving means for driving said transfer discs in synchronised rotational move-



ment with each other at a preselected given rotational speed, change speed gear means connecting said driving means to said transporting toothed wheels for selectively varying the rotational speed of said transporting toothed wheels, and means for supplying said adhesive tapes in pairs, with one tape of each pair over the other tape of that pair, through a gap between one of said guide rollers and the associated pressure roller so that said tapes are pressed against one another with said connecting wires of said components which have been fed-in by said transfer discs disposed therebetween to form said continuous belt.

4,279,279

FILLING MACHINE AND METHOD FOR LOW PARTICULATE CHEMICALS

William R. Schevey, Honesdale; Robert G. Weslowski, Boothwyn, both of Pa., and John D. Morentz, Wilmington, Del., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Oct. 5, 1979, Ser. No. 82,246
Int. Cl.³ B65B *3/26*
U.S. Cl. 141—5 **6 Claims**

1. An apparatus for automatically filling bottles with high purity liquid which comprises:

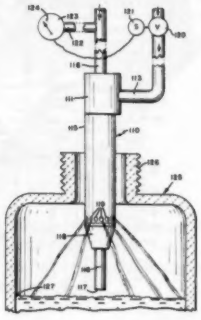
(a) a first plurality of filler head assemblies each defining a liquid feed channel extending vertically downward to a second plurality of circumferentially spaced, outwardly opening apertures and also defining an inert gas feed channel extending vertically downward adjacent the liquid feed channel to a lower end below the outwardly opening apertures;

(b) a vertically moveable platform beneath said first plurality of filler head assemblies;

(c) bottle delivery means for delivering and aligning a first plurality of bottles onto said vertically moveable platform with the opening of each bottle being aligned beneath the apertures and said lower end of a corresponding filler head assembly without contact being made between the bottle and the filler head assembly;

(d) lift means for lifting said vertically moveable platform when said first plurality of bottles are aligned beneath said first plurality of filler heads upwardly until each lower end and associated second plurality of apertures is within a bottle without contact being made between the bottle and the filler head assembly;

(e) liquid feed means for delivering liquid to and through said liquid feed channel and said outwardly opening apertures into each bottle when said vertically moveable platform is raised; and



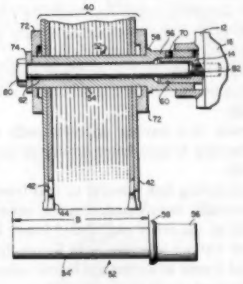
(f) inert gas means for delivering of flow of inert gas at substantially constant pressure through each said inert gas feed channel and for sensing back pressure of said inert gas and for shutting off the flow of liquid to the adjacent liquid feed channel at a location remote from said filler head assemblies when back pressure of inert gas caused by the liquid level in a bottle reaching said lower end is sensed.

4,279,280

INTERCHANGEABLE DADO SHAFT ASSEMBLY FOR CIRCULAR SAWS

Raul R. Pairis, 21256 Garndal St., Walnut, Calif. 91789

Filed Nov. 13, 1979, Ser. No. 93,856
Int. Cl.³ B27C *9/02*
U.S. Cl. 144—1 F **7 Claims**



1. A removable dado shaft assembly for mounting dado blade packs on portable saws having rotary shafts, comprising:

a dado shaft with a constant diameter shank having a radially extending abutment flange and a central bore,

attachment means integral with said dado shaft and adjacent to the abutment flange for engaging said saw shaft,

a lock-up bolt extending through said bore to engage a threaded axial opening in the rotary saw shaft, and

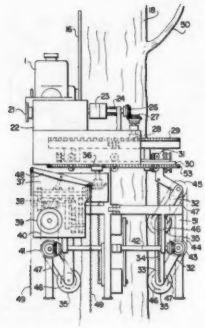
clamping means to engage said dado blade pack on the dado shank intermediate the abutment flange and a head end portion of the lock-up bolt.

4,279,281

AUTOMATIC BRANCH CUT-OFF DEVICE

Hiroshi Nakamura, Tokyo, Japan, assignor to Shinko Plant Co. Ltd., Tokyo, Japan

Filed Oct. 15, 1979, Ser. No. 84,920
Claims priority, application Japan, May 25, 1979, 54-64657
Int. Cl.[3] A01G *23/02*
U.S. Cl. 144—2 Z 3 Claims



1. An automatic branch cut-off device comprising:

a frame adapted to be divided into two halves to surround a tree trunk and including a circular fixed ring gear;

an elevating means connected to said frame for moving said frame upwardly and downwardly on the trunk;

means for powering said elevating means;

revolving cutting means including a rotary ring, means for mounting the rotary ring on said frame which comprises rollers, an engine mounted on said rotary ring, a cutting tool mounted on said rotary ring, means for drivingly connecting said engine to said cutting tool, and a first pinion gear being rotatably mounted on said rotary ring and drivingly connected to said engine, said first pinion meshing with said fixed ring gear to revolve said cutting means about the periphery of the tree trunk;

transfer clutch means engaged with said means for powering said elevating means for reversing the direction of movement of the entire device upwardly or downwardly;

said elevating means comprising:

an upper link having opposite ends and being pivotally attached to said frame on one of said ends of said upper link;

a lower link having opposite ends and being pivotally attached to said frame on one of said ends of said lower link;

a connecting link parallel to said frame pantographically, pivotally interconnecting the other end of said upper link to the other end of said lower link, said connecting link having a length, said lower link being attached to said frame at a distance below where said upper link is attached equal to said length;

rollers fitted with a flexible material on the surface thereof, said rollers being rotatably mounted at the points where said connecting link interconnects with said upper link and said lower link; and

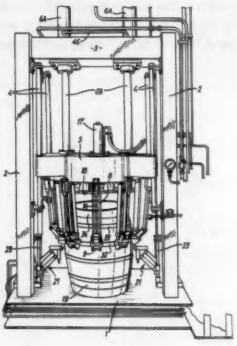
a spring connected between said connecting link and said frame pushing a top of said connecting link from a side of said frame to a side of the trunk of the tree, thereby automatically exerting a component of a force to press said rollers against the trunk of the tree by positioning the center of gravity of said side of said frame outside said rollers.

4,279,282

BARREL HOOP DRIVERS

Robert N. Whyte, 28 Rubislaw-Den South, Aberdeen, Scotland

Filed Aug. 27, 1979, Ser. No. 69,621
Int. Cl.[3] B27H *5/10*
U.S. Cl. 147—9 5 Claims



1. A barrel hoop driver comprising a base, an upright frame mounted on said base, a press head slidably movable vertically towards and away from said base on guide rods carried by said frame, a plurality of push arms spaced around the circumference of a circle, and being pivotally mounted at one end on and movable with the press head, pivotally biased towards the centre of said circle, and adapted at their free ends drivingly to engage a hoop on a wooden barrel when the latter is supported on said base, and a pair of hydraulic rams for effecting movement of said press head and having their cylinders mounted on said frame and their pistons connected to said press head, wherein the free ends of the push arms each has a claw including a rigid driving member which presents a flanged face for engagement with a barrel hoop, and at least first and second separate mutually spaced apart guide members spaced inwardly from the edge of the flanged face by a distance about equal to the thickness of a barrel hoop and the mutual spacing of said first and second guide members being in a direction along the flanged face of the driving member, said first and second guide members having faces for guiding contact with a peripheral surface of said barrel, said faces being inclined to contact said peripheral surface substantially tangentially thereto, and the thickness and mutual spacing of the guide members being effective to substantially prevent accumulation of wood shavings on the driving member, the driving member being pivotally connected to its push arm.

4,279,283

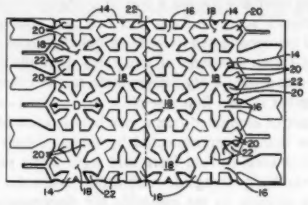
HIGH PERIMETER TREAD ELEMENT

Leon J. Hitzky, Bonneweg, Luxembourg, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Dec. 10, 1979, Ser. No. 102,049
Int. Cl.[3] B60C *11/00*
U.S. Cl. 152—209 R 6 Claims

1. A pneumatic tire having a circumferentially extending ground-engaging tread portion characterized by said tread portion consisting essentially of a plurality of independent projections spaced about the circumference of the tire, each of said independent projections having a solid central portion and a plurality of limbs extending radially outward from said central portion, said limbs being spaced apart such that when in the footprint of the tire said limbs do not come in contact with adjacent limbs, the perimeter of each of said projections being at least five times the mean diameter of the circumscribing circle about said projection, said ground-engaging tread portion having a width at least 60% of the maximum section

diameter of said tire, said tire having an aspect ratio from about 60 to 85, the total perimetrical length of said projections in said



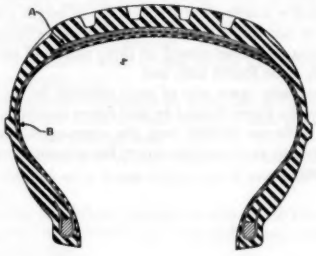
tread portion divided by the total area of the tread surface is at least 3.5 lineal inches per square inch.

4,279,284

PNEUMATIC RUBBER TIRE CONTAINING ENHANCED INNER LINER OR INNER TUBE

Leighton R. Spadone, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Nov. 16, 1979, Ser. No. 95,117
Int. Cl.³ B60C *5/14*
U.S. Cl. 152—330 R **11 Claims**



1. A pneumatic rubber vehicle tire containing reinforcing steel elements therein, said elements selected from at least one of steel elements and metal-coated steel elements, characterized in that said tire has an adherent inner liner comprised of (A) 100 parts by weight of at least one polymer selected from halobutyl rubber and/or copolymers of isobutylene and cyclopentadiene and (B) about 1 to about 25 parts by weight polybutene polymer per 100 parts by weight (A), said polybutene polymer having a number average molecular weight in the range of about 200 to about 3000.

4,279,285

APPARATUS AND METHOD FOR FORMING A TUBE ARTICLE ON A CORE

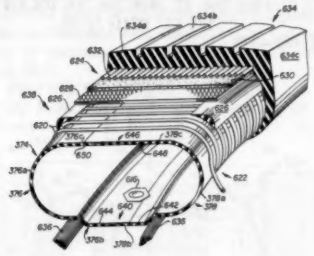
Charles E. Grawey, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Continuation of Ser. No. 868,018, Jan. 9, 1978, abandoned, which is a continuation of Ser. No. 741,652, Nov. 15, 1976, Pat. No. 4,124,053, which is a division of Ser. No. 588,732, Jun. 20, 1975, Pat. No. 4,044,085, which is a continuation-in-part of Ser. No. 385,956, Aug. 6, 1973, abandoned. This application Dec. 10, 1979, Ser. No. 101,926
Int. Cl.³ B60C *3/00, 5/12*
U.S. Cl. 152—330 R **8 Claims**

1. A tube tire, comprising:

(a) an elastomeric toroidal tube member having inner and outer peripheries, a first tube portion defining a side portion and inner and outer peripheral portions, and a second tube portion defining a side portion and inner and outer peripheral portions overlapping respectively, the inner and outer peripheral portions of the first tube portion, said inner peripheral overlap and said outer peripheral overlap being formed at the inner and outer peripheries, respectively;

(b) a plurality of inextensible reinforcing loops encircling



said toroidal tube member, said reinforcing loops lying in a plane substantially normal to the mid-circumferential plane of said tube member, said reinforcing loops and said tube member forming a carcass;

and

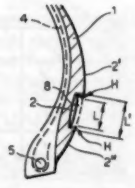
(c) an outer casing for said carcass, including elastomeric material vulcanized to said tube member.

4,279,286

PNEUMATIC TIRES HAVING ORNAMENTED SIDEWALLS, AND TO THEIR MANUFACTURE

Claudio Merli, Cormano, and Carlo Francia, Monza, both of Italy, assignors to Euteco S.p.A., Milan, Italy

Division of Ser. No. 843,307, Oct. 18, 1977, Pat. No. 4,224,268. This application Feb. 5, 1980, Ser. No. 118,698
Claims priority, application Italy, Nov. 19, 1976, 29539 A/76
Int. Cl.³ B60C *13/00*
U.S. Cl. 152—353 R **2 Claims**



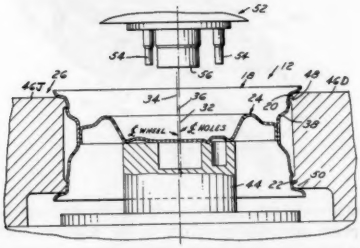
1. A pneumatic tire casing of the type having a pair of side walls formed of black elastomer comprising at least one recess formed in one of said side walls having a bottom surface and upwardly and inwardly tapering side surfaces to define a dovetail shaped cross section and a layer of elastomer having a color different from that of said side walls and a thickness less than the depth of said recess secured to and covering only said bottom surface of said recess.

4,279,287

METHOD OF WHEEL MANUFACTURE FOR CORRECTING ROTATIONAL NON-UNIFORMITY OF A PNEUMATIC TIRE AND WHEEL ASSEMBLY

Anwar Daudi, East Lansing; John H. Golata, Lansing, and Doarde G. Triponi, East Lansing, all of Mich., assignors to Motor Wheel Corporation, Lansing, Mich.

Filed Dec. 17, 1979, Ser. No. 104,319
Int. Cl.³ B21D *53/26*
U.S. Cl. 152—375 **8 Claims**



1. A method of constructing a tire and wheel assembly comprising the steps of:

(a) providing a wheel assembly comprising a rim with bead seats for mounting of a tire and a disc mounted internally of said rim;

(b) forming at least one opening in said disc for mounting said wheel to a vehicle with said opening being centered eccentrically of the average axis of said bead seats in a direction preselected nominally to locate a predetermined point in the first harmonic of radial runout of said wheel at a selected location circumferentially of said wheel; and

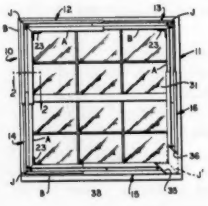
(c) mounting on said wheel a tire which has been marked at a circumferential location on the tire corresponding to a predetermined point in the first harmonic of a radial characteristic of said tire opposite in phase to said predetermined point in said first harmonic of radial runout of said wheel such that said first harmonic of said tire complements said first harmonic of said wheel to provide a smoother running wheel and tire assembly.

4,279,288

ADJUSTABLE FRAME APPARATUS

George G. Lanier, 26 Butler St., Rome, Ga. 30161

Filed May 29, 1979, Ser. No. 43,342
Int. Cl.³ E06B *9/06*
U.S. Cl. 160—374 **3 Claims**



1. Adjustable frame apparatus for attachment in surrounding relation with an existing opening such as a window or the like, comprising:

a first assembly having a pair of elongated frame members mutually interconnected to form an included right angle;

a second assembly separate from said first assembly and having a pair of elongated frame members mutually interconnected to form an included right angle, one of said frame members of said second assembly being selectably and adjustably connectable to one of said frame members of said first assembly;

a third assembly having a pair of elongated frame members mutually separate from said first and second assemblies and interconnected to form an included right angle, one of said frame members of said third assembly being selectably and adjustably connectable to the other said frame member of said first assembly;

said pair of elongated frame members in each of said assemblies being interconnected by means which enable said paired arms to fold from said right angle position to be substantially alongside each other, when the frame members making up the assembly are disconnected from another frame member;

a first separate frame member selectably and adjustably connectable to the other said frame member of said second assembly;

a second separate frame member selectably and adjustably connectable to the other said frame member of said second assembly;

each of said selectable and adjustable interconnections of said frame members comprising a telescopic sliding interconnection between said frame members; and

each of said sliding interconnections being selectably slidable independently of the other sliding interconnections so that said assemblies and frame members selectably and adjustably interconnect to form a rectangular frame which is independently adjustable in length and width;

each of said frame members comprising a channel member having a channel closed on three sides and having a partially open fourth side; and

said partially open side of each channel facing outwardly from the frame formed by said frame members, and defining a flange located near the opening defined by said frame, so as to provide means for securing a web to said frame.

4,279,289

PROCESS FOR PREPARATION OF FIBER-REINFORCED MAGNESIUM ALLOY MATERIALS

Keisuke Ban, Fujimi; Takeo Arai, Higashimatsuyama, and Akimasa Daimaru, Kawagoe, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

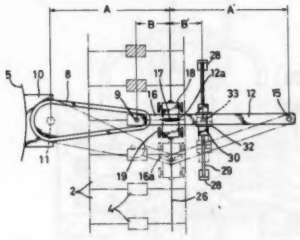
Filed Oct. 3, 1979, Ser. No. 81,444
Claims priority, application Japan, Oct. 5, 1978, 53/122997
Int. Cl.³ B22D *19/14*
U.S. Cl. 164—97 **1 Claim**

1. A process for the preparation of fiber-reinforced magnesium alloy materials, which comprises placing a shaped article of silica-alumina type fibers having an average diameter of 2 microns or less and a bulk density of 0.5 g/cc or less in a casting mold, pouring as a matrix a melt of magnesium alloy maintained at a temperature lower than 800° C. into the casting mold, filling said magnesium alloy melt into said shaped article by means of a high pressure coagulation casting method while maintaining the configuration of the shaped article to form a composite, whereby a reaction between the surface fibers of said shaped article and the melt causes precipitation of a mixture of magnesium-silicon and magnesium-aluminum compounds.

4,279,290
DEVICE FOR DETECTING GATES IN AN AUTOMATIC POURING MACHINE FOR CASTING

Teigo Mikami; Hiroaki Miyano, and Masahide Kosugi, all of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jan. 2, 1980, Ser. No. 109,047
Claims priority, application Japan, May 15, 1979, 54/59910
Int. Cl.[3] B22D 35/04
U.S. Cl. 164—154 7 Claims



1. In an automatic pouring machine for casting located in the vicinity of a horizontal pouring line provided thereon with a plurality of adjacently placed molds intermittently conveyed in one direction and having a pouring trough provided with a spout for pouring molten metal into the gate of each of said molds and horizontally swingable by a vertical pivot, a device for detecting said gate comprising:

a means provided in each of said molds for indicating the position of said gate;

an arm horizontally swingable by a vertical pivot symmetrically provided opposite said pivot of said trough with respect to said pouring line;

a pair of slits provided in ends of said arm and said trough being aligned upon linear alignment of said arm and said trough;

a connecting pin slidably engaged in said slits to move along a perpendicular bisector on a line connecting said pivots with each other;

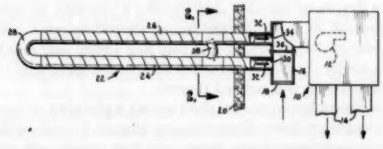
a detector provided on said arm for detecting said means indicating the position of said gate, the distance between said detector and said connecting pin being identical with that between said connecting pin and said spout of said trough upon linear alignment of said arm and said trough; and

a driving means for moving said connecting pin upon receipt of a signal from said detector.

4,279,291
SUBTERRANEAN HEATING AND COOLING SYSTEM

Roland Lambert, Jackson, Miss., assignor to Ladek Corporation, Ridgecrest, La.

Filed Jun. 25, 1979, Ser. No. 51,405
Int. Cl.[3] F24J 3/02
U.S. Cl. 165—1 5 Claims



1. A method of thermally treating air comprising:

forcing the air to flow along an underground path through the soil in heat exchange relationship therewith;

recycling a portion of the air traveling along said path;

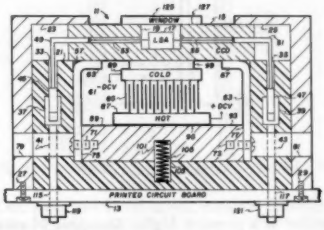
increasing the velocity of said recycled air as the latter commences travel along said path; and

retreiving a portion of the air traveling along said path for use at a remote location.

4,279,292
CHARGE COUPLED DEVICE TEMPERATURE GRADIENT AND MOISTURE REGULATOR

Edmund Swiatosz, Maitland, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 29, 1978, Ser. No. 947,279
Int. Cl.[3] F25B 29/00; F28F 7/00; H01L 25/04
U.S. Cl. 165—61 32 Claims



1. An apparatus temperature and moisture regulator, comprising in combination:

an apparatus whose temperature and moisture is to be regulated;

means effectively connected to said apparatus for the effective packaging thereof in such manner as to effect the support thereof and thermally isolate it from its ambient environment;

a heat-sink extending through one of the walls of said packaging means;

a thermoelectric cooler having a hot junction and a cold junction, with the hot junction thereof effectively thermally connected to said heat-sink, and with the cold junction thereof effectively thermally connected to a predetermined area of said apparatus whose temperature and moisture is to be regulated; and

means thermally coupling said heat sink to said apparatus at one or more areas more removed from the center of said apparatus than the area effectively thermally connected by said cold junction, for warming the perimeter of said apparatus to reduce condensation otherwise promoted by cooling said predetermined area.

4,279,293
HIGH TEMPERATURE HEAT EXCHANGER HAVING POROUS TUBE SHEET PORTIONS

Valentin Koump, Hempfield Twp., Westmoreland Co., Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 18, 1979, Ser. No. 49,688
Int. Cl.[3] F28F 9/04
U.S. Cl. 165—82 5 Claims

1. A shell and tube heat exchanger comprising:

a. a shell;

b. a plurality of tubes supported within said shell;

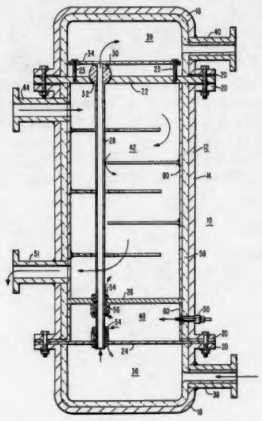
c. tube sheets for defining a first, second and third chamber within said shell and for laterally restraining said tubes, portions of said tube sheets being porous, said third chamber being disposed between said first and second chambers;

d. means for inletting a first fluid medium into said first chamber, said first chamber being in flow communication with the inside of said tubes;

e. means for flowing a second fluid medium through said

second chamber in heat exchange relation with said first fluid; and

f. means for inletting a third fluid medium into said third



chamber at a pressure higher than that of said first and second chambers such that said third fluid passes from said third chamber into said first and second chambers through said porous portions.

4,279,294

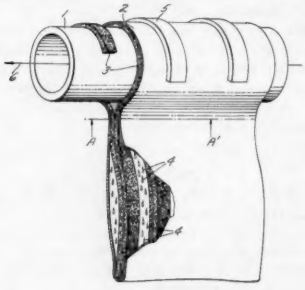
HEAT PIPE BAG SYSTEM

Peter R. Fitzpatrick; Russell G. Meyerand, Jr., both of Glastonbury, and Kenneth E. Shotwell, Stafford Springs, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 22, 1978, Ser. No. 972,599

Int. Cl.³ F28D *15/00*

U.S. Cl. 165—45 **27 Claims**



1. A heat pipe bag for below-ground use the interior of which is adapted to be combined in heat transfer communication with the exterior of a first heat transfer fluid conduit and to contain in sealed fashion a second heat transfer fluid comprising a hollow, thin-walled bag having flexibility, puncture resistance, heat transfer fluid inertness, and prolonged below-ground exposure integrity, containing a wick material extending radially outward to the end of the bag from the intended location of the conduit along the anticipated path of principal heat transfer and including a plurality of spacers adjacent the wicks in the heat pipe bag.

4,279,295

SCRAPED-SURFACE HEAT EXCHANGER

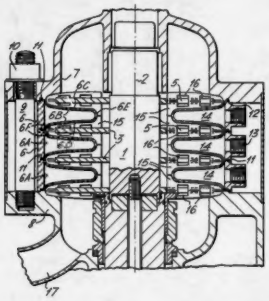
Edward D. Duckworth, Wokingham, England, assignor to A. Johnson and Company (London) Limited, London, England

Continuation of Ser. No. 860,432, Dec. 14, 1977, abandoned. This application Jun. 26, 1980, Ser. No. 163,292

Claims priority, application United Kingdom, Dec. 16, 1976, 52663/76; Feb. 23, 1977, 7716/77

Int. Cl.³ F28F *5/00*

U.S. Cl. 165—94 **26 Claims**



1. A scraped-surface heat exchanger comprising a stator surrounding a rotor, the stator having a plurality of annular projections extending inwardly towards the axis of rotation of the rotor, each projection having a first flank which is the upper flank when the heat exchanger is appropriately positioned, with the axis of rotation of the rotor vertical, and which then slopes downwardly, proceeding towards said axis, the rotor carrying scrapers which scrape the first flanks and the opposite flanks of the projections as the rotor rotates.

4,279,296

SEGMENTED RING HEADER

Henry J. Blaskowski, West Simsbury, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Mar. 8, 1979, Ser. No. 19,021

Int. Cl.³ F28F *7/00, 9/26*

U.S. Cl. 165—134 R **3 Claims**

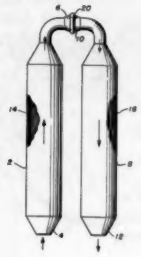
1. In a high pressure gas cooler having a first cylindrical pressure containment vessel having a gas inlet at one end and a gas outlet at the other end and a plurality of heat exchange tubes lining the interior thereof, a second cylindrical pressure containment vessel having a gas inlet at one end and a gas outlet at the other end and a plurality of heat exchange tubes lining the interior thereof, the gas inlet of said second vessel being in communication with the gas outlet of said first vessel, and means for circulating a fluid through the exchange tubes lining said first and second vessels; and apparatus for collecting the fluid discharging from the heat exchange tubes lining said first and second vessels and directing the fluid to said fluid collection drum comprising:

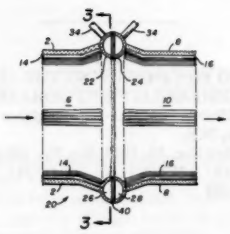
a. a first hemi-toroidal shell having a plurality of openings around its inner circumference shaped to mate with the heat exchange tubes lining said first vessel, said first hemi-toroidal shell disposed concentric to the gas outlet of said first vessel and welded thereto;

b. a second hemi-toroidal shell having a plurality of openings around its inner circumference shaped to mate with the heat exchange tubes lining said first vessel, said second hemi-toroidal shell disposed concentric to the inlet of said second vessel and welded thereto;

c. means for rigidly joining said first hemi-toroidal shell to said second hemi-toroidal shell thereby providing a reser-

voir for collecting the fluid discharging from the heat exchange tubes; and





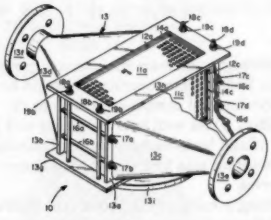
d. means for conveying the fluid from said reservoir to a fluid collection drum.

4,279,297

HOUSING FOR CERAMIC HEAT RECUPERATORS AND ASSEMBLY

Chester J. Dziedzic, Signal Mountain, Tenn.; Joseph J. Cleveland, Dushore, and Ray L. Newman, Towanda, both of Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Oct. 16, 1978, Ser. No. 951,438
Int. Cl.[3] F28D *7/02;* F28F *3/00*
U.S. Cl. 165—165 **8 Claims**



1. A heat recuperator assembly comprising:

(a) a core of a cross-flow ceramic recuperator, having first and second pairs of opposing faces defining cell openings for the passage of first and second heat transfer fluids, respectively, in directions transverse to one another, the first fluid transferring heat to the second fluid during passage through the cells, whereby each pair of faces has in operation a hot face and a cold face, the hot face of the first pair being the inlet face for the first fluid, and the hot face of the second pair being the outlet face for the second fluid, and

(b) a metallic housing surrounding the core, the housing defining openings communicating with the core cell openings, the housing openings adapted for coupling to external fluid conduits, characterized in that the housing comprises

(1) two pairs of opposing plates having opposing inner faces for contact with the hot and cold faces of the core,

(2) conduit means extending from the outer faces of the plates,

(3) means for coupling the conduit means to external fluids conduits, and

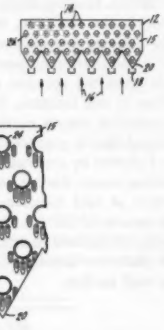
(4) means for holding the inner faces in contact with the core faces, said means comprising two sets of elongated bolts and nuts, the bolts of each set extending between opposing pairs of plates, and said means further comprising means to bias the plates in an inward direction against the ceramic recuperator.

4,279,298

HEAT EXCHANGER WITH CONDENSATE BLOW-OFF SUPPRESSOR

Yong N. Lee, Arlington Heights, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Mar. 17, 1980, Ser. No. 131,124
Int. Cl.[3] F25D *21/14;* F28F *1/14*
U.S. Cl. 165—181 **3 Claims**



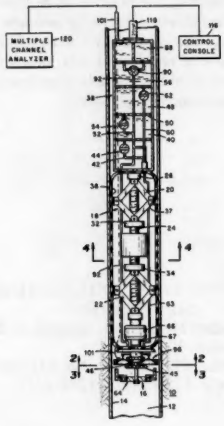
1. A fin and coil type evaporator assembly positionable in a vertically, upwardly flowing air stream comprising: an evaporator coil including a plurality tube sections extending transversely to the direction of air flow; a plurality of plate-like fins closely spaced apart, each fin lying in a plane parallel to the direction of air flow and being in heat exchange contact with said tube sections which pass through said fins; and means defining a plurality of channels, elongated in the direction of air flow and located closely adjacent to said tube sections only on the up-stream side thereof, said channels being adapted to break up and draw off, by capillary action, large droplets of water condensing on said tube sections and adhering to the underside thereof, whereby blow-off of condensate from the tubes is minimized.

4,279,299

APPARATUS FOR INSTALLING CONDITION-SENSING MEANS IN SUBTERRANEAN EARTH FORMATIONS

Lowell Z. Shuck, Morgantown, W. Va., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Dec. 7, 1979, Ser. No. 101,370
Int. Cl.³ E21B *47/06*
U.S. Cl. 166—60 **7 Claims**



1. An apparatus for emplacing condition-sensing means at a selected location within a wellbore penetrating a subterranean earth formation, housing means adapted to be selectively positioned within the wellbore, means carried by said housing means for securing and maintaining the housing means at the selected location, grinding means carried by said housing and engagable upon the rotation thereof with an encompassing wall surface at said location, means for rotating said grinding means, container means carried by the housing means for storing liquid agents, spraying means coupled to the container means and carried by the housing means at a location adjacent said grinding means for spraying the liquid agents onto said wall surface at said location, condition-sensing means, displaceable means carried by the housing means for supporting the sensing means, and means for actuating the displaceable means to place the sensing means in an abutting relationship with said wall surface.

4,279,300

TREATING FLUID APPLICATOR

Michael J. Wirsch, Odessa, Tex., assignor to Exxon Production Research Company, Houston, Tex.

Filed Jan. 25, 1980, Ser. No. 115,596
Int. Cl.³ E21B *19/00*
U.S. Cl. 166—90 **6 Claims**

1. Apparatus for applying fluid to equipment being run into a well comprising:

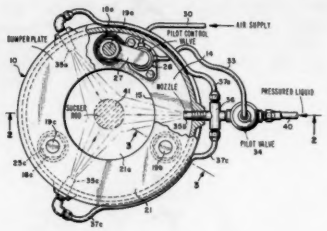
a housing capable of being mounted on a wellhead having an opening therethrough to permit passage of said equipment;

at least one nozzle in said housing capable of directing flow of said fluid toward said equipment;

valve means for controlling flow of said fluid to said nozzle;

a movable actuator for operating said valve means and having a first position at which flow of fluid through said valve means is prevented and a second position at which flow of fluid through said valve means is permitted;

said actuator including spring means for urging said actuator to the first position thereof and a movable plate supported on said housing, the weight of said suspended equipment



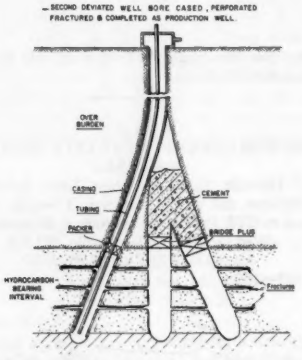
in said well moving said actuator to the second position thereof.

4,279,301

METHOD FOR IMPROVING THE EFFECTIVE PERMEABILITY OF FORMATIONS

Thomas E. Williams, Ventura, Calif., assignor to Texaco Inc., White Plains, N.Y.

Filed Dec. 13, 1979, Ser. No. 103,305
Int. Cl.³ E21B *7/04, 43/24, 43/267, 47/00*
U.S. Cl. 166—250 **11 Claims**



1. A method to increase the effective permeability of a subterranean hydrocarbon-bearing formation having at least one productive interval comprising the steps of:

(a) drilling a first well bore traversing said productive interval of said hydrocarbon-bearing formation,

(b) fracturing said first well bore adjacent said productive interval,

(c) setting a bridge plug above said productive interval in said first well bore and thereafter undertaking a cementing operation in said first well bore to a desired depth,

(d) drilling a second well bore having the upper portion thereof in common with said first well bore and deviated from said first well bore from the top of said cementing operation and thereafter fracturing said productive interval adjacent said deviated second well bore,

(e) setting a bridge plug above the productive interval in said second well bore and thereafter undertaking a cementing operation in said second well bore to a desired depth,

(f) repeating steps (d) and (e) to provide additional similarly deviated well bores,

(g) drilling a final similarly deviated well bore and completing said final well bore by setting tubing and packer.

4,279,302

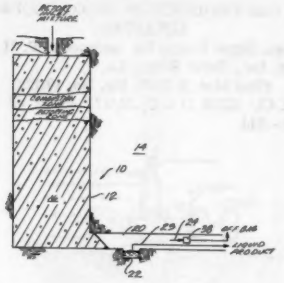
DETERMINING THE LOCUS OF A PROCESSING ZONE IN AN OIL SHALE RETORT BY EFFLUENT OFF GAS HEATING VALUE

Chang Y. Cha, Bakersfield, Calif., assignor to Occidental Oil Shale, Inc., Grand Junction County, Calif.

Continuation of Ser. No. 883,065, Mar. 3, 1978, abandoned. This application Oct. 22, 1979, Ser. No. 86,789

Int. Cl.³ E21B *43/247, 47/00;* E21C *41/10*

U.S. Cl. 166—251 **14 Claims**



1. A method for determining the locus of a processing zone advancing through a fragmented permeable mass of particles containing oil shale in an in situ oil shale retort in a subterranean formation containing oil shale, the retort having an upper, a lower and side boundaries of unfragmented formation and the retort having an effluent off gas passing therefrom, the method comprising the steps of:

determining the kerogen content at selected locations in the subterranean formation intermediate the upper and lower boundaries of the retort before processing the retort; and

monitoring the effluent off gas from the retort for its heating value.

4,279,303

POLYURETHANE BALL SEALERS FOR WELL TREATMENT FLUID DIVERSION

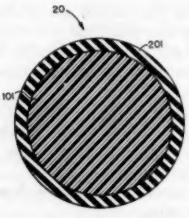
Steven R. Erbstoesser, Houston, Tex., assignor to Exxon Production Research Company, Houston, Tex.

Filed Jul. 3, 1978, Ser. No. 921,413

The portion of the term of this patent subsequent to Jul. 25, 1995, has been disclaimed.

Int. Cl.³ E21B *33/138, 43/27*

U.S. Cl. 166—284 **12 Claims**



1. A method of treating a subterranean formation surrounding a cased wellbore wherein the casing has an interval provided with a plurality of perforations, said method comprising:

(a) flowing down said casing a liquid having suspended therein a plurality of ball sealers, said ball sealers being sized to seal said perforations and comprising a solid core and a polyurethane elastomer cover; and

(b) continuing the flow of said liquid until at least a portion of said perforations are sealed by said ball sealers.

11. A ball sealer for plugging perforations in a casing penetrating subterranean formations which comprises a syntactic foam core and a polyurethane, elastomer coating which covers the core.

4,279,304

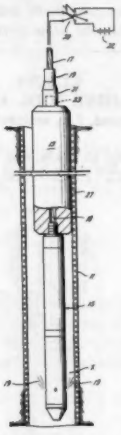
WIRE LINE TOOL RELEASE METHOD

James C. Harper, Rte. 7, Box 59, Houma, La. 70360

Filed Jan. 24, 1980, Ser. No. 114,750

Int. Cl.³ E21B *31/03*

U.S. Cl. 166—301 **15 Claims**



1. Method of operating a wire line tool in an earth bore hole to enable the tool to be freed in case the tool gets stuck in the hole, and to free the tool in the event the tool becomes stuck in the hole, comprising;

associating with the tool a quantity of mud active agent to be released if the tool gets stuck, running said agent into the hole along with the tool, and

upon the tool becoming stuck, releasing the mud active agent;

wherein the mud active agent is initially stored in a gun loaded with fuel and the agent is released by igniting the fuel to produce combustion product pressure to force the agent out of the gun.

4,279,305

PROCESS FOR STIMULATING A WELL WITH A SALINE SURFACTANT SULFATE, ALKANOL AND ACID SYSTEM

Randolph H. Knapp, New Orleans, La.; Jimmie B. Lawson; Joseph Reisberg; David R. Thigpen, and Harold J. Hill, all of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed May 27, 1980, Ser. No. 153,465

Int. Cl.³ E21B *43/22, 43/27*

U.S. Cl. 166—307 **8 Claims**

1. A well treating process comprising:

injecting fluid at a selected rate into a subterranean reservoir in fluid communication with the well;

including in the injected fluid separate portions of fluid A, which consists essentially of a highly saline aqueous solution or dispersion that contains from about 10 to 25% by weight of sodium chloride or the sodium chloride equivalent of other dissolved salts, from about 2 to 15% by weight of at least one surface active polyalkoxyalcohol sulfate and from about 0.5 to 5% by weight of at least one 4 to 7 carbon atom alkanol, and fluid B, which consists

essentially of at least one reservoir acidizing solution which is capable of dissolving at least one component of the reservoir rock;

correlating the kinds and amounts of the compounds dissolved or dispersed within fluid A relative to physical and chemical properties of the reservoir and reservoir fluids so that, at the reservoir temperature, the interfacial tension between fluid A and the reservoir oil is low enough for an efficient displacement of that oil and, at the selected rate of fluid injection, the ratios between the effective viscosity of fluid A and mixtures of fluid A and the reservoir oil are high enough to maintain a substantially stable displacement of the reservoir oil within the reservoir for a distance of from about 1 to 10 feet from the well; and,

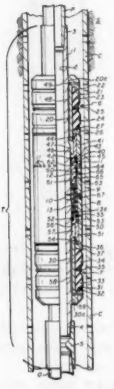
injecting at least one portion of fluid B following an injection of fluid A into the same portion of the reservoir.

4,279,306

WELL WASHING TOOL AND METHOD

Robert D. Weitz, Houma, La., assignor to Top Tool Company, Inc., Houma, La.

Filed Aug. 10, 1979, Ser. No. 65,520
Int. Cl.[3] E21B *37/00, 33/124*
U.S. Cl. 166—312 **19 Claims**



1. A well washing tool comprising:

a tubular mandrel having a flow passage therethrough and the upper end of which is open and provided with means for connecting said tool in a pipe string extending to the surface of a well and the lower end of which is normally open but which may be provided with means for blocking flow of fluids from said pipe string through said mandrel flow passage;

first and second packer assemblies carried on said mandrel at opposite ends thereof;

an outer tubular body surrounding said mandrel between said packer assemblies;

an annular chamber between said mandrel and said surrounding tubular body, said annular chamber being in fluid communication with said mandrel flow passage through first port means provided in the walls of said mandrel, said tubular body being provided with second port means permitting fluid communication between said annular chamber and the exterior of said tools; and

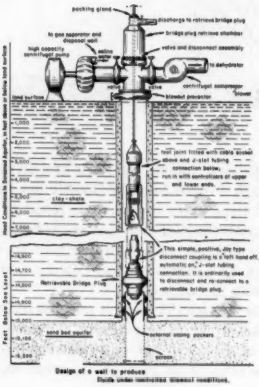
valve means carried within said annular chamber independently of said packer assemblies blocking said second port means and preventing said fluid communication between said annular chamber and said tool exterior but responsive to predetermined pressure communicated to said annular chamber through said first port means to unblock said second port means permitting fluid communication between said mandrel flow passage and said tool exterior through said first port means, said annular chamber and said second port means.

4,279,307

NATURAL GAS PRODUCTION FROM GEOPRESSURED AQUIFERS

Paul H. Jones, Baton Rouge, La., assignor to P. H. Jones Hydrogeology, Inc., Baton Rouge, La.

Filed Mar. 9, 1979, Ser. No. 19,122
Int. Cl.[3] E21B *33/072, 33/127, 43/12, 43/30*
U.S. Cl. 166—314 **36 Claims**



1. A method of natural gas production from wells having a well-bore and well-head and which are drilled into geopressured gas-saturated aquifers, comprising the steps of:

(A) permitting an initial flow of geopressured gas-saturated water;

(B) causing a substantial absence of back-pressure at the well-head by drawing off flow by pumping;

(C) continuing the flow of gas-saturated water until water slugs appear at the well-head, to indicate reversal of the gas/water permeability ratio and creation of a gas cap whose edge is the gas/saturated-water interface; and

(D) maintaining the absence of back-pressure by pumping to permit a maximum continuous flow of natural gas.

27. An apparatus for natural gas production from wells having a well-bore and well-head and which are drilled into geopressured gas-saturated aquifers, comprising:

(a) fluid flow control means located within the well-bore to prevent the flow of fluid;

(b) means for equalizing the pressure in the well-bore above and below the fluid flow control means;

(c) means for operating the fluid flow control means to permit fluid flow;

(d) means for permitting an initial flow of geopressured gas-saturated water;

(e) means for causing a substantial absence of back-pressure at the well-head and for continuing the flow of gas-saturated water until wafter slugs appear at the well-head to indicate reversal of the gas/water permeability ratio and creation of a gas cap whose outer edge is the gas/-saturated-water interface; and

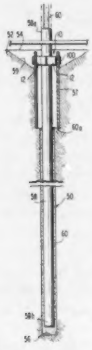
(f) means for maintaining the absence of back-pressure to permit a maximum continuous flow of natural gas.

4,279,308

SURFACE CASING STABILIZER AND HANGER AND METHOD OF EMPLOYING THE SAME

Charles E. Gray, deceased, late of Jena, La., and by Emma Dee Gray, executrix, Jena, La. 71342

Filed Apr. 25, 1979, Ser. No. 33,082
Int. Cl.³ E21B *17/00*
U.S. Cl. 166—315 **5 Claims**



1. A well casing hanger and stabilizer for fixedly mounting the upper end of a tubular well casing concentrically within a conductor and in a well bore hole, said hanger and stabilizer comprising:

laterally opposed, oppositely oriented, semi-circular, edge abutting metal hanger cylinder halves forming an annular assembly concentrically surrounding the upper end of said well casing and positioned between said well casing and said bore hole wall,

said halves having upper and lower end walls, vertical edges and radially outer and inner walls,

slots on the upper walls extending inwardly from said vertical edges and between said radially outer and inner walls, said slots cooperating with means for locking said cylinder halves together in edge abutment with the inner periphery of said cylinder halves in frictional grip with the outer periphery of said casing and with the outer periphery of said cylinder halves lodged within the well bore hole at its upper end, and

means for clamping the conductor and hanger together to strengthen the conductor at the location of the hanger.

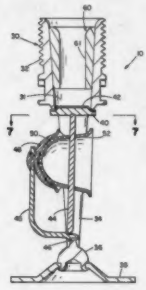
4,279,309

SPRINKLER HEAD WITH NONCIRCULAR THROAT

Michael A. Fischer, North Kingston, and James W. Mears, Warwick, both of R.I., assignors to Grinnell Fire Protection Systems Company, Inc., Providence, R.I.

Filed Jun. 29, 1979, Ser. No. 53,262
Int. Cl.³ A62C *37/12*
U.S. Cl. 169—37 **9 Claims**

1. In a fire-protection sprinkler head of the type including a base, a throat in said base through which fire-retardant fluid can flow, a deflector plate spaced away from said base, and one or more arms extending from said base for supporting said deflector plate, whereby when flow through said throat is established fluid emerges from said throat in a stream which impinges on said plate and is deflected in a spray pattern, said arms being located so that they tend to obstruct the flow of said fluid so as to produce shadow areas in said spray pattern where the spray density is lower than average, the improvement wherein the transverse cross section of said throat is noncircular and elongated principally along a single axis directed away from said arms, said elongation being such that, in any said transverse cross section, the dimension of said throat in the general direction of said single axis is greater than the dimension in any other direction and such that said single axis has the same orientation along the entire axial length of the throat, the shape of said elongated cross section being selected so that said stream emerging from said throat is also elongated



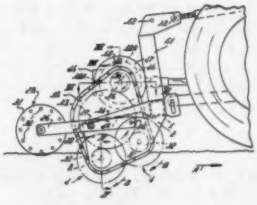
away from said arms, thereby spreading portions of said stream away from said arms so as to reduce the obstructing influence of said arms and thereby increase the density of said spray pattern in said shadow areas.

4,279,310

SOIL WORKING MACHINE

Cornelis van der Lely, 7, Brüschenrain, Zug, Switzerland

Filed Sep. 10, 1979, Ser. No. 73,860
Claims priority, application Netherlands, Sep. 28, 1978, 7809814
Int. Cl.³ A01B *33/02, 33/08, 33/10, 33/14*
U.S. Cl. 172—47 **29 Claims**



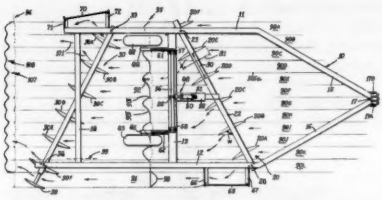
1. A soil working machine comprising a frame and at least two soil working rotors journalled in said frame for rotation about respective, substantially horizontal axes that extend transverse to the normal direction of travel, driving means connected to rotate said rotors, each of said rotors having corresponding soil working means, the axes of rotation of said rotors being normally positioned at different levels and located one in front of the other with respect to the direction of machine travel, the working paths of the soil working means of the forward rotor intersecting the working paths of the rear rotor, each of said two rotors comprising an elongated carrier formed by plates having interengaging longitudinal ribs and soil working members fastened to said ribs.

4,279,311

HIGH SPEED TILLER WITH WIDELY SPACED DISCS

William J. Dietrich, Sr., Congerville, Ill., assignor to DMI, Inc., Goodfield, Ill.

Filed Jul. 23, 1979, Ser. No. 59,682
Int. Cl.[3] A01B *21/08*
U.S. Cl. 172—509 9 Claims



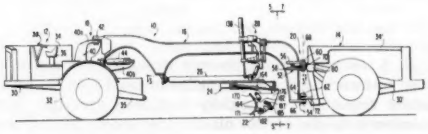
1. Apparatus for tilling soil adapted to operate at ground speeds in excess of about 4½ miles per hour, comrising: a frame; at least a first set of rotatable discs carried by said frame for tilling the soil and adapted to throw the soil in a first lateral direction, the discs of said first set being spaced from each other at least as great as about 75 percent of the diameter of said discs to leave alternate strips of tilled and untilled ground; at least a second set of discs carried by said frame to the rear of said first set and adapted to throw soil in a lateral direction opposite to said first lateral direction; the discs of said second set being spaced from each other at least as great as about 75 percent of the diameter of said discs and located at till said strips of untilled soil left by said first set, the lateral working width of said discs of said second gang being sufficient to work said strips of untilled soil left by said first set, first deflector means adjacent the working surface of an outermost disc of said first set for channeling dirt thrown thereby onto a strip of untilled ground in front of an associated outermost disc of said second set; and second deflector means adjacent the working surface of an outermost disc of said second set for deflecting soil thrown thereby into a furrow formed by a disc on said first set, the axes of said discs of said first and second sets being substantially horizontal and defining a working angle in the range of about 20° to 35°, whereby all of the soil is tilled in a single pass of said apparatus without substantial overlap of said discs of said first and second sets and said apparatus leaves the soil substantially free of ridges and furrows.

4,279,312

DUAL TRACTOR ROAD GRADER WITH DOUBLE ARCHED CENTER FRAME

Donald L. Pyle, Rte. 1, Box 298, Miles City, Mont. 59301

Filed Mar. 29, 1979, Ser. No. 25,155
Int. Cl.[3] E02F *3/76*
U.S. Cl. 172—789 4 Claims



1. An earth working apparatus comprising:
first single axle tractor means,
second single axle tractor means,
a double arched center frame articulated at one end thereof to said first tractor means and at the other end thereof to said second tractor means,
a draw bar and yoke assembly including a subframe mounted to said center frame, said subframe supporting a rotatable subframe ring for rotation about an axis intersecting the plane of said draw bar and yoke assembly,
a mold board assembly including a mold board and blade carried by said rotatable ring and means for adjusting the angle of attack of said blade, the angle of inclination of the longitudinal axis of said mold board, the vertical lift position of the mold board and blade, and lateral position of the rotatable subframe ring relative to the arched center frame,
the improvement wherein:
said double arched center frame comprising a first arcuate underportion, a second arcuate underportion spaced longitudinally from said first arcuate underportion, said first arcuate underportion including a first depending leg and a second depending leg, said second arcuate underportion including a third depending leg and a fourth depending leg, said second depending leg and said third depending leg defining therebetween a depending center common leg of said double arched center frame,
a ball and socket mount connecting the leading end of said draw bar and the yoke assembly to said depending center common leg of said double arched center frame,
a pair of longitudinally spaced yoke plates affixed to said center frame intermediate of said center common leg and said other end of said arched center frame,
bell cranks pivotably mounted to said spaced yoke plates on respective lateral sides of said center frame and each including a first arm doubly pivotably coupled to one end of a corresponding hydraulic lift cylinder for pivotal movement about intersecting horizontal axes, each lift cylinder disposed on a respective side of said center frame and a second arm at an angle to said first arm and pivotably coupled to a link member common to said bell cranks,
means for pivotably connecting the other end of said lift cylinders to said rotatable subframe ring on opposite sides of said center frame,
means for pivotably connecting one end of a side shift hydraulic cylinder to said subframe at one side of said center frame and at the other end to said link member intermediate of its pivot connections to the second arms of said bell crank members, such that extension and retraction action of said hydraulic lift cylinders causes said subframe, said rotatable ring and said mold board assembly to be vertically raised or lowered, extending or retracting one of said hydraulic lift cylinders with respect to the other, causes said mold board assembly to be tilted in the plane of the longitudinal axis of the mold board and extension or retraction action of said side shift hydraulic cylinder causes said subframe and said mold board assembly to be shifted laterally with respect to the longitudinal center line of said center frame.

4,279,313

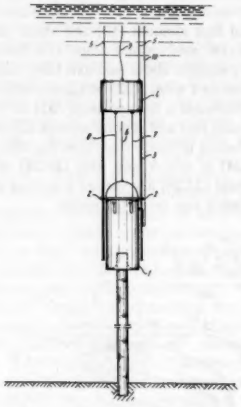
UNDER WATER PILE DRIVER

Joost W. Jansz, deceased, late of The Hague, Netherlands by Henriëtte C. Jansz-de l'Ecluse, heir, assignor to Hollandsche Beton Groep N.V., Rijswijk, Netherlands

Filed Apr. 18, 1979, Ser. No. 31,093
Claims priority, application Netherlands, Apr. 19, 1978, 7804172
Int. Cl.[3] E02D *7/10*
U.S. Cl. 173—112 3 Claims

1. An apparatus for underwater pile driving, comprising:
(a) a submersible drive unit
(b) means suspending the drive unit from a surface vessel or platform.
(c) auxiliary frame means permanently attached to and depending downwardly from the drive unit,
(d) a pile hammer operatively disposed below the drive unit and guided within the auxilliary frame for vertical movement relative to the drive unit, and
(e) flexible high pressure conduit means connected between the drive unit and the pile hammer for transmitting energy

generated within the drive unit to the pile hammer, whereby shocks and vibrations developed during impacts



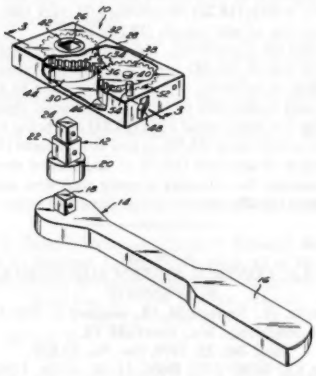
of the pile hammer are substantially isolated from the drive unit.

4,279,314

RATCHET WRENCH ATTACHMENT

Darrel Taub, 6611 Woodley, Apt. 11, Van Nuys, Calif. 91406

Filed May 5, 1980, Ser. No. 146,798
Int. Cl.³ E21B *3/00*
U.S. Cl. 173—163 **9 Claims**



1. An attachment to be used in conjunction with a ratchet wrench comprising:

a housing having an internal compartment, an access opening formed within said housing connecting with said internal compartment;

a primary drive gear rotatably mounted within said internal compartment, said primary drive gear having a socket opening centrally located within said primary drive gear, said socket opening connecting with said access opening;

a secondary drive gear rotatably mounted within said internal compartment, said secondary drive gear being operatively connected through an idler gear to said primary drive gear;

a spring assembly connected to both said primary and said secondary drive gears, said spring assembly being windable by rotating said socket opening, said socket opening to connect with a socket plug, said spring assembly to cause rotation of said socket plug; and

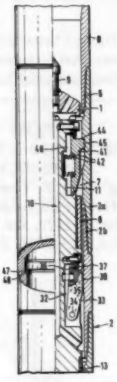
a movable pawl mounted on said housing and located within said internal compartment, said movable pawl being movable between an engaging position and a disengaging position, said engaging position connecting said movable pawl with one of said drive gears and preventing rotation of said socket opening by said spring assembly.

4,279,315

APPARATUS FOR EXTRACTING CORES

Fritz Tibussek, Mönchen-Gladbach, Fed. Rep. of Germany, assignor to Wirth Maschinen- und Bohrgerate-Fabrik GmbH, Fed. Rep. of Germany

Filed Jan. 31, 1980, Ser. No. 117,292
Claims priority, application Fed. Rep. of Germany, Feb. 2, 1979, 2903936
Int. Cl.³ E21B *10/02*
U.S. Cl. 175—249 **17 Claims**



1. In an apparatus for extracting cores which comprises an outer tube, an inner tube which contains a core receiving space, and a striking device which comprises a hammer and an anvil for producing a periodic axial movement of the inner tube relative to the outer tube, the improvement comprising that the inner tube, the striking device and an associated supporting body form a unit which may be moved through the outer tube in the axial direction thereof by means of a withdrawl mechanism, said supporting body being provided with a sleeve-shaped extension which surrounds said striking device, and that a part of said unit joined to an element of the striking device for rotational entrainment may be connected to the inner tube.

4,279,316

EARTH BORING BIT WITH ECCENTRIC SEAL BOSS

James E. Helmick, Plano, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Oct. 9, 1979, Ser. No. 83,085
Int. Cl.³ F16C *17/02*; E21B *9/10*
U.S. Cl. 175—371 **2 Claims**

1. A rolling cutter earth boring bit for drilling by having an axial load and rotary load applied, comprising:

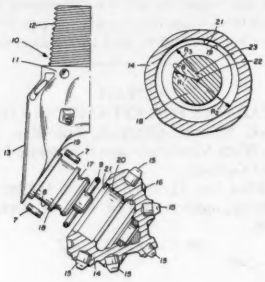
an axially extending bit body;

at least one bearing pin extending from said bit body, said bearing pin having a bearing pin central axis extending generally radially;

a rolling cone cutter rotatably mounted on said bearing pin;

said bearing pin having an annular seal surface immediately adjacent said body eccentric to said pin central axis and in alignment with an annular facing surface in said cone, said annular seal surface having a seal surface central axis displaced from said bearing pin central axis on the side

thereof opposite said axial load on said pin from said cone; and



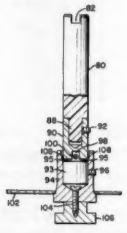
an annular seal positioned between said seal surface and said rolling cone cutter that is substantially evenly squeezed therebetween when said axial load is applied.

4,279,317

MAGNETIC COUPLING FOR A WEIGHING BALANCE ASSEMBLY

Dick P. McCord, and Mark E. Eberhardt, Jr., both of Troy, Ohio, assignors to Hobart Corporation, Troy, Ohio

Filed Oct. 1, 1979, Ser. No. 80,803
Int. Cl.³ G01G *23/10*
U.S. Cl. 177—185 **5 Claims**



1. In a weighing balance assembly including means for supporting a sample to be weighed, means for weighing the sample, and a generally upright force transmitting sample support shaft connecting the sample support means and weighing means, the improvement comprising:

means secured to said weighing means magnetically coupling said sample support shaft to said weighing means while permitting transverse movement of said sample support shaft relative to said weighing means when said sample support shaft and sample supporting means are bumped or jarred, whereby damaging forces and torques are prevented from reaching said weighing means.

4,279,318

TRACK TENSIONING APPARATUS

Thomas C. Meisel, Jr., Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

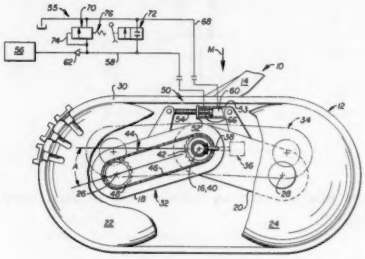
Continuation-in-part of Ser. No. 909,759, May 26, 1978, abandoned. This application Nov. 9, 1979, Ser. No. 92,913
Int. Cl.³ B62D *55/30*
U.S. Cl. 180—9.64 **6 Claims**

1. A work vehicle (**10**), comprising:

a frame (**14**) having an axis (**16**);

a first element (**18**) having a first wheel (**22**) and being connected to said frame (**14**) and pivotally movable relative to said frame (**14**) about said axis (**16**) of said frame (**14**), said first wheel (**22**) having an axis (**26**) and being rotatable about said axis (**26**);

a second element (**20**) having a second wheel (**24**) and being connected to said frame (**14**) and pivotally movable relative to said first element (**18**) and about said axis (**16**) of said frame (**14**), said second wheel (**24**) having an axis (**28**) and being rotatable about said axis (**28**), said second wheel (**24**) and said first wheel (**22**) being movable one relative to the other between a first position (**32**) at which said axes (**26,28**) of said first and second wheels (**22,24**) are spaced a first preselected distance one from the other and a second position (**34**) at which said axes (**26,28**) of said first and second wheel (**22,24**) are spaced a second different preselected distance one from the other;



a track (**30**) positioned about and in contact with said first and second wheels (**22,24**) and having a tension initiated in response to said first and second wheels (**18,20**) being urged against said track (**30**);

power means (**36**) for rotating at least one of said first and second wheels (**18,20**) for driving said track (**30**) with said at least one of said wheels (**18,20**); and

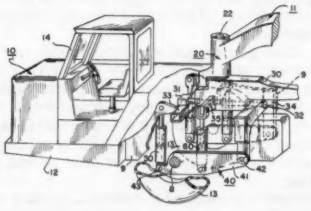
means (**50**) for controllably, pivotally moving said first and second wheels (**22,24**) one relative to the other for controllably maintaining a preselected tension in said track (**30**), said means (**50**) including a hydraulic cylinder (**52**) having first and second ends (**53,54**) and being connected at one of said ends (**53,54**) to said first element (**18**) and at the other of said ends (**53,54**) to said second element (**20**) at locations for pivotally moving said first and second elements (**18,20**) one relative to the other.

4,279,319

HYDRAULIC CONTROL SYSTEM FOR VEHICLE AXLE SUSPENSION

Hardin Joyce, Jr., Springfield, Ill., assignor to Fiat-Allis Construction Machinery, Inc., Deerfield, Ill.

Filed Jul. 25, 1979, Ser. No. 60,829
Int. Cl.³ B60D *7/02;* **B60G** *11/30, 17/06, 17/08*
U.S. Cl. 180—12 **11 Claims**



1. A control system for a hydraulic suspension system of a double-axle articulated vehicle having a tractor portion and a trailer portion,

said tractor portion including a drive axle operatively connected to a tractor frame with at least one double-acting hydraulic cylinder operatively connected between the drive axle and the frame for damping vertical bounce movement therebetween,

a hitch member for coupling said trailer portion to said tractor portion to permit relative rolling motion therebetween about an axis extending longitudinally through said vehicle with at least one other double-acting hydraulic cylinder operatively connected between the drive axle and the hitch member to dampen the relative rolling movement between the tractor and trailer portions about said axis, said control system comprising:

cushioning control means for controlling the spring and viscous damping characteristics of each of said double-acting hydraulic cylinders, said cushioning control means interposed in fluid communication between a source of pressurized hydraulic fluid and a first chamber of each of said double-acting hydraulic cylinders,

rebound control means for controlling the spring and viscous damping characteristics of each of said double-acting hydraulic cylinders, said rebound control means interposed in fluid communication between said source of pressurized hydraulic fluid and a second chamber of each of said double-acting hydraulic cylinders,

sensing means for detecting the vertical position of the tractor frame relative to the drive axle and generating a control signal responsive to the relative vertical position of the tractor frame and the drive axle, and

levelling means for maintaining the tractor frame within a predetermined vertical distance relative to the drive axle, and operatively connected to said sensing means to receive said control signal for actuation in response thereto,

said levelling means including valve means operable to a plurality of positions and interposed in fluid communication between said source of pressurized hydraulic fluid and the first and second chambers of said double-acting hydraulic cylinders,

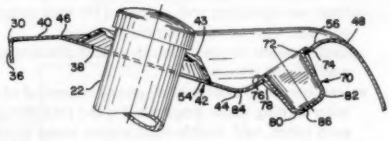
said valve means operable for mutually exclusively directing pressurized hydraulic fluid to said first chamber of said double-acting hydraulic cylinders and discharging pressurized hydraulic fluid from said first chamber of said double-acting hydraulic cylinders thereby modulating the flow of pressurized hydraulic fluid therefrom and thereto.

4,279,320

HAND GRIP/FILLER NECK RECESS FOR A TRACTOR HOOD

Michael C. Brandl, Westmont; David T. Kataoka, Berwyn, and George E. Bowman, Country Club Hills, all of Ill., assignors to International Harvester Company, Chicago, Ill.

Filed Jan. 22, 1980, Ser. No. 114,433
Int. Cl.³ B62D *25/10*
U.S. Cl. 180—69 R **4 Claims**



1. The improvement of a hood for a tractor having a filler neck passing through a neck aperture in the top surface of the hood, said neck aperture being transversely spaced apart from the centerline of the tractor, the improvement including, in combination:

a downwardly projecting trough in said top surface, the bottom of said trough being a major depression substantially parallel to said tractor centerline and connected to said top surface at four break lines by inner, outer, fore and aft sides, said major depression including a pair of run-off apertures, each of said run-off apertures being adjacent one of said fore and aft sides, said inner side including said neck aperture and said outer side including a grip aperture;

means for resiliently and sealably connecting said filler neck and said inner side; and

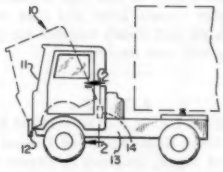
a downwardly projecting hand grip sealably secured to said outer side in said grip aperture, the base of said hand grip being a primary depression with fore and aft ends connected by a surface substantially parallel to said tractor centerline, said primary depression including a pair of drain apertures, each of said drain apertures adjacent one of said fore and aft ends.

4,279,321

LATCHING SYSTEM FOR A TRUCK CAB

Thomas R. Stone, Hayward, Calif., assignor to PACCAR Inc, Bellevue, Wash.

Filed Jan. 9, 1980, Ser. No. 110,680
Int. Cl.³ B62D *27/06*
U.S. Cl. 180—89.14 **13 Claims**



1. A rear mounting and latching system for a cab-over-engine truck cab, for enabling relative movement of the cab and the truck frame when the frame twists due to movement of the truck over uneven surfaces, comprising:

a pair of frame mounts comprising mounting cradles secured to the frame at the rear of the cab, one at each side, each mounting cradle having a first surface steeply inclined downwardly in the outboard direction and an adjacent second surface, extending generally from the lower end of the first surface in the outboard direction, generally sloping downwardly but at less inclination than the first surface;

a pair of cab mounts secured to the cab, shaped complementarily to the mounting cradles and positioned to engage in the cradles from above and to center the cab rear when the cab is in its normal position on the frame, each mount having a first surface positioned to engage the first surface of the cradle and a second surface positioned to engage the second surface of the cradle; and

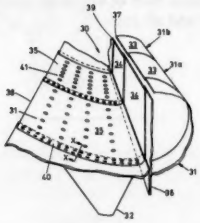
latching means for urging each mount toward its normal position in the mounting cradle while enabling side-to-side, upward, and rocking motion at each cab mount, relative to the frame;

whereby, upon twisting of the frame, the cab rear can undergo side-to-side and rocking motion with respect to the frame, with the second surface of one mount sliding outboard on the corresponding second surface of the adjacent mounting cradle and the other mount traveling above and inboard of its normal position, out of contact with the adjacent cradle.

4,279,322
AIR CUSHION VEHICLE FLEXIBLE SKIRT ASSEMBLIES

Raymond L. Wheeler, East Cowes; John Henry, Cowes, and John E. Dadswell, Newport, all of England, assignors to British Hovercraft Corporation Limited, Yeovil, England

Filed Apr. 23, 1979, Ser. No. 32,217
Claims priority, application United Kingdom, Apr. 28, 1978, 16151/78; Mar. 22, 1979, 10198/79; Apr. 20, 1979, 13801/79
Int. Cl.³ B60V *1/16*
U.S. Cl. 180—128 **18 Claims**

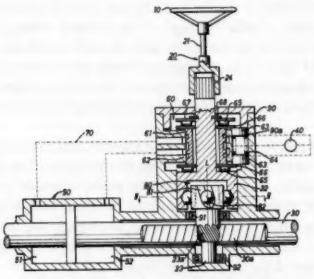


1. A rip stop device comprising a flexible sheath member formed from fabric reinforced elastomeric material, a flexible core member extending throughout the length of said sheath member and chemically bonded thereto, said sheath member including tensile load path discontinuities in portions of the reinforcing fabric of said sheath member which extend in opposed lateral directions with respect to said core member at intervals along the length of said core member in regions of said sheath member remote from said core member so that local tensile loads on said sheath member are passed into and transmitted along said core member.

4,279,323
POWER STEERING DEVICE FOR WHEELED VEHICLES

Masahisa Ando, Aichi; Keigo Kato, and Tomozi Ishikawa, both of Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Aug. 21, 1979, Ser. No. 68,533
Claims priority, application Japan, Sep. 1, 1978, 53-107806
Int. Cl.³ B62D *5/06*
U.S. Cl. 180—148 **5 Claims**



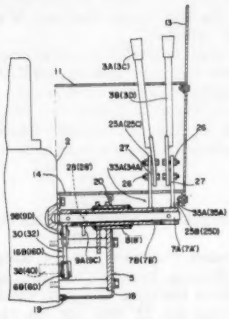
1. In a power steering device for wheeled vehicles comprising a steering shaft assembly including first and second shafts arranged for relative rotation on aligned axes, a driven member for operative connection with the steering road wheels of the vehicle and arranged to be driven by rotational torque of said steering shaft assembly, a hydraulic cylinder for actuating said driven member by fluid under pressure supplied thereto from a source of fluid pressure, a hydraulic circuit connecting said cylinder to said fluid pressure source to supply fluid under pressure to said cylinder, valve means having a valve member arranged to be moved in response to rotation of said steering shaft assembly in an axial direction, said valve means being disposed within said hydraulic circuit to control the supply of fluid under pressure in response to axial movement of said valve member, and a cam mechanism associated with said steering shaft assembly for transmitting rotational torque of said first shaft to said driven member through said second shaft and for conducting axial movement of said valve member in response to rotation of said shaft assembly,

the improvement wherein one of said shafts is provided at its inner end with a cylindrical portion and the other shaft has an inner end coupled within the cylindrical portion of the one shaft, and wherein said cam mechanism comprises at least one cam groove formed on the inner end of the other shaft at a predetermined angle relative to the axis line of said steering shaft assembly, at least one ball radially movable in the cylindrical portion of the one shaft and operatively engaging said cam groove, and a sleeve member in surrounding relationship to the cylindrical portion of the one shaft and being biased to urge said at least one ball towards said at least one cam groove.

4,279,324
OPERATING LEVER ASSEMBLY FOR FARM TRACTORS

Toshiyuki Yotsumoto, Kishiwada; Tuginobu Ujita, Sakai, and Eisaku Shinohara, Izumi, all of Japan, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 11, 1979, Ser. No. 74,452
Claims priority, application Japan, Oct. 14, 1978, 53-126362
Int. Cl.³ B60K *20/02*
U.S. Cl. 180—336 **5 Claims**



1. An operating lever assembly for a farm tractor including a driver's seat and a transmission casing, comprising:

at least two operating rods extended through and outwardly of a side wall of said transmission case,

a bracket means disposed outside of and attached to said side wall of said transmission,

at least one set of double-shaft means composed of inner and outer turning shafts, respectively, and rotatable relative to each other, said double-shaft means being supported for rotation by said bracket means, and said inner turning shaft having an inner end portion fittingly inserted into a bore formed in said side wall of said transmission and thus turnably supported by said side wall,

at least two sets of link means for operatively connecting said operating rods to said inner and outer turning shafts, respectively, and

a control lever means having at least two operating levers disposed adjacent to said driver's seat, said operating levers being operatively connected to said inner and outer turning shafts, respectively.

4,279,325

ACOUSTIC TREATMENT FOR FANS

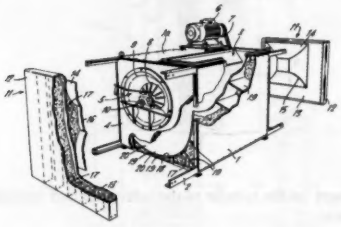
Louis A. Challis, 158 Queen St., Woollahra, New South Wales 2025, Australia

Division of Ser. No. 695,622, Jun. 14, 1976, Pat. No. 4,174,020. This application Jun. 15, 1979, Ser. No. 48,863

Claims priority, application Australia, Jul. 1, 1975, PC2191; Aug. 13, 1975, PC2790

Int. Cl.³ F01N *1/04*; E04B *1/82*

U.S. Cl. 181—211 **4 Claims**



1. Apparatus for attenuating noise emitted from an inlet port to a centrifugal fan, and comprising a panel member adapted to be mounted in spaced confronting relationship to said inlet port, said panel member including

(a) a rigid backing member,

(b) a perforated, acoustically permeable facing mounted in spaced disposition from said rigid backing member and adapted to face said inlet port,

(c) wall means dividing the space between said rigid backing member and said facing into a plurality of Helmholtz absorption cavities, said facing providing a small area of perforation for each of said cavities for transmitting noise into said cavities, at least a substantial portion of said cavities being dimensioned to have resonant frequencies in the range of about 30 Hz to 250 Hz, and

(d) acoustic infill in the absorption cavities between said rigid backing member and said facing, whereby said apparatus has a high degree of attenuation in the range of about 30 Hz to 250 Hz.

4,279,326

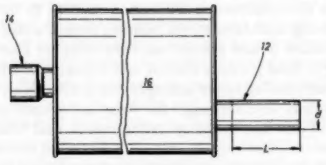
EXHAUST MUFFLER

Sam W. Meineke, and Harold Nedell, both of 6330 W. Loop S., Suite 103, Bellaire, Tex. 77401

Continuation of Ser. No. 946,593, Sep. 28, 1978, abandoned, which is a division of Ser. No. 784,158, Apr. 4, 1977, Pat. No. 4,164,267, which is a continuation of Ser. No. 598,709, Jul. 24, 1975, abandoned. This application Mar. 13, 1980, Ser. No. 130,169

Int. Cl.³ F01N *7/08*

U.S. Cl. 181—228 **4 Claims**



1. A universal replacement muffler which is adjustable at the time of installation to connect the exhaust pipe section and the tail pipe section of an existing vehicular exhaust system without the use of adapters or extenders comprising:

an elongate body portion having a housing and end walls at opposite ends of said housing, each of said walls defining an opening;

gas passage means interior said elongate body portion;

a first end pipe fabricated from killed steel and connected to said opening in a first of said end walls,

said first end pipe having a first original diameter,

said first end pipe being of sufficient initial length so that it may be trimmed to a desired final length which will connect the exhaust pipe section and the tail pipe section of an existing vehicular exhaust system, and

said first end pipe being expandable to between about 112% and about 125% of said first original diameter,

whereby said muffler eliminates the necessity of using adapters or extenders to connect a replacement muffler to the exhaust pipe section or to the tail pipe section of an existing vehicular exhaust system.

4,279,327

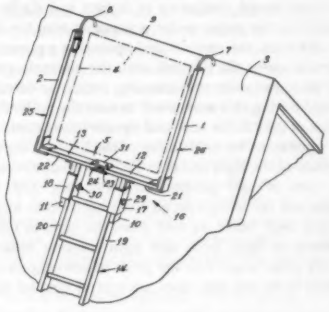
VENTILATING LADDER

Richard A. Warren, 1223 Hamilton, Elmhurst, Ill. 60126

Filed Apr. 4, 1980, Ser. No. 115,040

Int. Cl.³ E06C *1/36*

U.S. Cl. 182—206 **4 Claims**



1. A folding ladder attachment device to be attached to the top of a roof ladder to aid in cutting ventilation holes in a roof comprising:

a. a pair of side bars separated by a distance greater than the distance across the area through which the ventilation hole is to be cut;

b. a lower bar member transverse to the pair of side bars and integrally secured to the pair of side bars at the ends of the lower bar member;

c. a pair of transverse bar members spaced apart and attached at one end to a center portion of said lower bar member to allow the top portion of the roof ladder to fit tightly between and parallel to the pair of transverse bar members;

d. a pair of sleeves integrally secured to the top portion of the roof ladder through which the pair of transverse bar members slide;

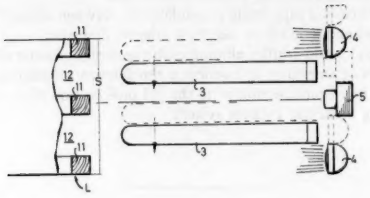
e. a pair of pins that slide through openings in the sleeve portion, openings in the upper portions of the roof ladder, and openings in the pair of transverse bar members to lock the ladder attachment to the roof ladder;

f. and a pair of rigid bar hooks integrally secured to the upper portions of the pair of side bars to secure the ladder attachment device to the ridge of the roof.

4,279,328
DEVICE FOR ORIENTING A LIFTING MEANS, FOR EXAMPLE, IN RELATION TO A LOAD

Sten H. N. Ahlbom, Västra Frölunda, Sweden, assignor to AB Volvo, Goteborg, Sweden

Filed Apr. 17, 1979, Ser. No. 30,828
Claims priority, application Sweden, Apr. 28, 1978, 7804927
Int. Cl.[3] B66B 9/20
U.S. Cl. 187—9 R 12 Claims



1. In a device for orienting a lift fork on a fork-lift truck in a certain position in relation to a pallet having a hole therethrough, comprising light-emitting means movable with the lift fork and disposed to illuminate the pallet, a photoelectric detector which is movable together with the lift fork, electronic control equipment connected to the photoelectric detector to receive signals from the same, and operating equipment for the lift fork, connected to the control equipment for moving the lift fork dependent on signals from the control equipment, an image consisting of lighter and darker fields being created on the pallet within a scanning area for the photoelectric detector, the control and operating equipment being disposed to move the lift fork with the photoelectric detector in one direction over the scanning area, the detector being arranged during this movement to scan the pallet to register said light and dark fields and send signals to the control and operating equipment for orientation of the lift fork depending on the location of the light and dark fields; the improvement in which the axes of said photoelectric detector and light-emitting means are vertically spaced from each other and are inclined toward each other, as seen from the side, in the direction of emission of light from said light-emitting means, at a sufficiently great angle that the point of convergence of said axes, as seen from the side, does not extend beyond the pallet.

4,279,329
SAFETY DEVICE FOR LIFT EQUIPMENT

Peter Gehron, Bensheim, Fed. Rep. of Germany, assignor to Gebr. Hofmann GmbH, KG Machinenfabrik, Darmstadt, Fed. Rep. of Germany

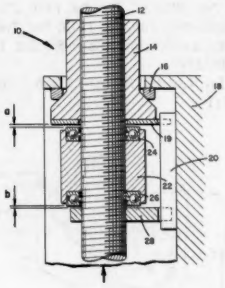
Filed Aug. 27, 1979, Ser. No. 69,766
Claims priority, application Fed. Rep. of Germany, Feb. 17, 1979, 2906172
Int. Cl.[3] B66B 11/04
U.S. Cl. 187—25 19 Claims

1. A safety device for spindle-operated lifting equipment, particularly for two-post motor-vehicle lifts having a lifting nut supporting a lift carriage guided on a post, the lifting nut being itself guided on a spindle, said safety device comprising:

a safety nut guided on a spindle and located at a first predetermined small distance beneath a lifting nut, said safety nut supporting the lifting nut upon excessive wear of the latter;

a lock nut guided on the spindle and located a second predetermined small distance beneath said safety nut; and

means for forcing said safety nut and said lock nut to run on the spindle with the lifting nut when the lifting nut is moving on the spindle, said means for forcing being responsive to weight placed on said safety nut when said safety nut supports the lifting nut to prevent upward

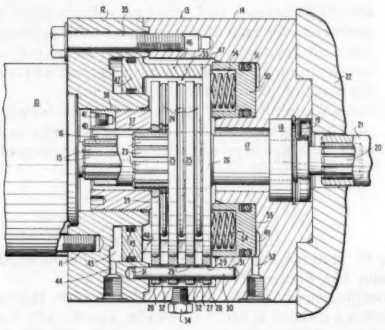


movement on the spindle of the safety nut and supported lifting nut.

4,279,330
DOUBLE-ACTING DISC BRAKE

Donald R. Pottorff, Mercersburg, Pa., and Rene G. Galmiche, Hagerstown, Md., assignors to Walter Kidde & Company, Inc., Clifton, N.J.

Filed Jun. 27, 1977, Ser. No. 810,511
Int. Cl.[3] F16D 55/46
U.S. Cl. 188—71.7 1 Claim



1. A disc brake comprising housing means, said housing means having a brake chamber and pressurized fluid chamber means, a rotor including rotor discs journaled on the housing means with the rotor discs disposed in said disc chamber, stator discs in the disc chamber in alternating relation to the rotor discs and being anchored to the housing means, a disc brake operating means in said pressurized fluid chamber means and responding to fluid pressure therein, and a brake disc adjusting means on said housing means and operable to selectively adjust said discs axially to compensate for wear and proper position and travel of said disc brake operating means, said brake disc adjusting means comrising an externally threaded sleeve having threaded engagement with the housing means and disposed in spaced surrounding relation to a portion of said rotor and having an end face adapted to bear against one endmost stator disc in the brake disc chamber, said threaded sleeve being split, and a tapered threaded plug connected with said split sleeve to expand the same laterally into locked engagement with the housing means.

4,279,331

FLOATING-CALIPER DISC BRAKE

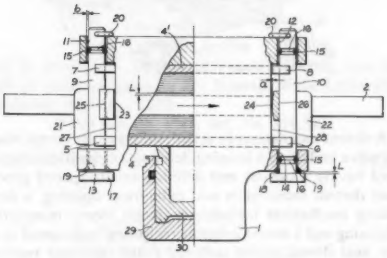
Hans-Henning Lüpertz, Darmstadt, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Continuation of Ser. No. 6,945, Jan. 25, 1979, abandoned. This application Oct. 22, 1979, Ser. No. 87,262

Claims priority, application Fed. Rep. of Germany, Feb. 6, 1978, 2804977

Int. Cl.³ F16D 55/224

U.S. Cl. 188—73.3 12 Claims



1. A floating-caliper disc brake comprising:

a brake carrier having a pair of spaced arms extending above the edge of a brake disc having an axis of rotation;

a brake caliper straddling the edge of said disc having a pair of spaced first supporting surfaces parallel to said axis of rotation, each of said pair of first supporting surfaces being associated with a different one of said pair of spaced arms above the edge of said disc;

a cylindrical cup secured to each of said pair of spaced arms centrally above said disc, each of said cups having a second supporting surface parallel to an associated one of said pair of first supporting surfaces to support said caliper in the direction of rotation of said disc and a concave opening opposite said second supporting surface having a longitudinal dimension parallel to said second supporting surface, said concave openings being opened outwardly away from each other in a common plane disposed perpendicular to and substantially above said disc;

a pair of brake shoes each bearing directly against said caliper, one of said pair of brake shoes being disposed on one side of said disc and the other of said pair of brake shoes being disposed on the other side of said disc;

a brake-actuating device carried by said caliper on said one side of said disc to actuate said pair of brake shoes; and

a pair of spaced guide pins secured to said caliper parallel to said axis of rotation, each of said pair of spaced guide pins slidably engaging said concave opening of a different one of said cups to axially and slidably guide said caliper relative to said carrier, to hold said pair of brake shoes against said caliper and to clamp said pair of first supporting surfaces, said second supporting surfaces and said pair of brake shoes relative to each other so that circumferential forces developed during braking at said pair of brake shoes are distributed to both of said pair of spaced arms through said pair of first supporting surfaces, said second supporting surface, said pair of guide pins and said concave openings.

4,279,332

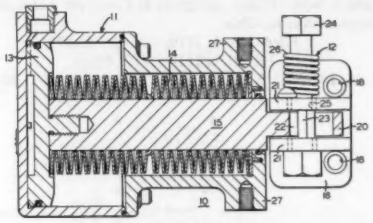
MANUAL RELEASE MECHANISM FOR SPRING-APPLIED PARKING BRAKE

Glenn Morgan, Brentwood, and Robert B. Morris, North Huntingdon, both of Pa., assignors to American Standard Inc., Wilmerding, Pa.

Filed Oct. 1, 1979, Ser. No. 80,593

Int. Cl.³ F16D 65/24

U.S. Cl. 188—170 10 Claims



1. A spring-applied, fluid pressure released parking brake device for a fluid pressure actuated brake mechanism having first and second relatively movable brake members, said parking brake device comprising:

(a) a parking brake cylinder having a control port via which fluid pressure is supplied and released concurrently with the application and release of said fluid pressure actuated brake mechanism;

(b) a parking brake lever connected between said parking brake cylinder and a first one of said brake members;

(c) a piston operatively disposed in said parking brake cylinder and having a push rod projecting therefrom, said push rod having a connection with a second one of said first and second brake members, said piston cooperating with said parking brake cylinder to form therebetween a control chamber communicated with said control port, to which the supply of fluid pressure establishes relative axial movement between said piston and said parking brake cylinder in a first direction to accommodate movement of at least one of said first and second brake members in a brake release direction, said piston further cooperating with said parking brake cylinder to form therebetween a spring chamber on the opposite side of said piston as said control chamber;

(d) spring means normally disposed under tension in said spring chamber to urge relative axial movement between said piston and said parking brake cylinder in a direction opposite said first direction to cause concurrent movement of said at least one of said first and second brake members in a brake application direction in the absence of fluid pressure at said control chamber to establish a spring-applied parking brake force; and

(e) said connection between said push rod and said second brake member comprising manually operable means for effecting axial displacement of said piston relative to said parking brake cylinder in said opposite direction an amount sufficient to cage said spring means and accordingly relieve said spring-applied parking brake force, wherein said manually operable means comprises:

(i) a bracket mounted on said second member and engageable with said piston push rod of said parking brake cylinder to provide said connection of said push rod with said second brake member; and

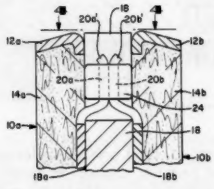
(ii) cam means carried by said bracket for effecting said engagement of said bracket with said piston push rod in a first position, whereby relative axial movement therebetween is absent to accordingly maintain said spring means under tension, and for effecting said engagement between said bracket and said piston push rod with relative axial movement therebetween when said cam means is manually operated to a second position,

thereby effecting said axial displacement of said piston relative to said parking brake cylinder to cage said spring means.

4,279,333
METHOD AND APPARATUS FOR FASTENING A FRIACTION WEAR PAD TO A DISK CORE MEMBER

Richard L. Crossman, Tallmadge, and Richard L. Kirk, North Canton, both of Ohio, assignors to Goodyear Aerospace Corporation, Akron, Ohio

Filed Jun. 4, 1979, Ser. No. 44,879
Int. Cl.[3] F16D *65/12, 69/04*
U.S. Cl. 188—218 XL 10 Claims



1. A friction component comprising:

a disk core member having arcuate inner and outer peripheral edges and a plurality of open-end slots formed therein at spaced intervals about the inner and outer peripheral edges thereof, said slots extending radially from said inner and outer peripheral edges into said core member;

a plurality of friction pads mounted on the face surfaces of the disk core member, each said pad having a substantially flat base in intimate contact with the respective face surface of the core member and each said base having a plurality of tabs extending therefrom, the ends of said tabs face only in the radial direction of said core member and thereby one of the peripheral edges, said tabs are bent toward the base such that the major portion of the tab length is substantially parallel to the plane of the base, the tabs of the pad on one core face abutting the tabs of a pad on the opposite core face within the slots of the core member, and

means mounted on the tabs in each of said slots to lock the tabs in abutting relationship to thus securely mount the friction pads to the core member, said means being readily accessible from the peripheral edges through said open-ended slots.

5. A method of mounting friction wear pads to a circular disk core member having an outer peripheral edge and an inner peripheral edge comprising the steps of:

providing open-ended slots within the disk core member at spaced intervals about the inner and outer peripheral edges and extending radially from the inner and outer peripheral edges into said core member;

providing a plurality friction wear pads for mounting on said core member, each of said pads being provided with a base and having a plurality of tabs extending therefrom, one series of tabs are formed and spaced for alignment with the slots in the core member about the outer peripheral edge while another series of tabs are formed and spaced for alignment with the slots in the core member about the inner peripheral edge thereof;

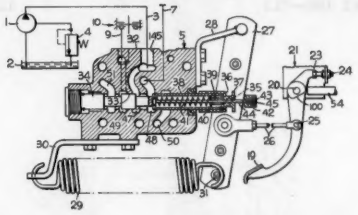
mounting said plurality of pads on the disk face surfaces such that the tabs are positioned in the core slots, the tabs of said pads on one face surface abutting the tabs of said pads on the opposite face surface of the core member; and

locking the abutted tabs together by radially sliding a clip means into each of said slots and over said abutting tabs to securely fasten the pads to the core member.

4,279,334
MECHANICAL DETENT FOR THREE SPEED POWER SHIFT TRANSMISSION

John R. Plate, and James H. Lucas, both of Milwaukee, Wis., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Aug. 6, 1979, Ser. No. 64,098
Int. Cl.[3] B60K *41/24;* F16D *67/04*
U.S. Cl. 192—3.57 10 Claims

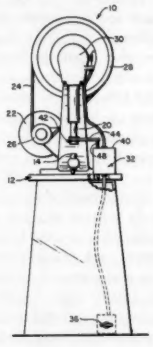


1. A detent mechanism in a hydraulic system comprising, a spool valve including a housing defining a cylindrical opening, a spool having a tubular end defining axially spaced grooves formed therein received in said cylindrical opening, a detent operating mechanism including a detent sleeve mounted on said housing and a detent actuator reciprocally mounted in said sleeve, said detent sleeve defining radial openings receiving detent elements for selective alignment with said grooves in the tubular end of said spool, a return spring means normally biasing said spool to a return position, said detent operating mechanism biasing said detent actuator for camming said detent elements radially outward in said openings of said detent sleeve and selectively in said grooves, said detent operating mechanism selectively releasing said detent elements from said grooves allowing said return spring to return said spool to the return position.

4,279,335
SAFETY DEVICE HAVING MACHINE DRIVE CAM CONTROL

Edwin W. Plumb, c/o Safeguard Manufacturing Company, Pomperaug Ave., Woodbury, Conn. 06798

Filed Mar. 28, 1979, Ser. No. 24,709
Int. Cl.[3] F16P *3/04*
U.S. Cl. 192—134 12 Claims



1. A safety device particularly suited to preclude operator access to a work area of power drive operated riveters, presses and the like and comprising a clearance indicator for detecting obstacles in a region surrounding the machine work area, the clearance indicator being movable between a starting position in remote relation to the work area and an operative position in

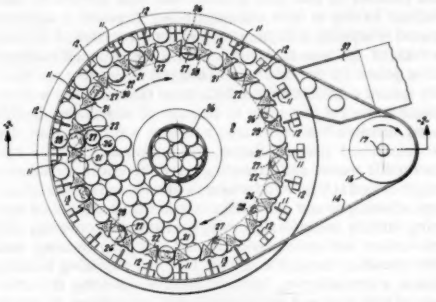
adjacent surrounding relation thereto indicative of an obstacle-free condition about the work area, and a machine operating control for effecting machine operation including a manually controlled drive input, a selectively operable drive output connected to the power drive of the machine, and a rotary cam control rotatable by the drive input from a start position into a ready position during movement of the clearance indicator from its starting to operative positions, the drive output being actuated only when the drive input imparts further angular movement to the rotary cam control with the clearance indicator located in operative position to rotate the cam control from its ready position to an actuating position wherein the rotary cam control actuates the drive output to effect machine operation.

4,279,336

SINGULATOR

Jerald M. Henderson, Davis, and Yuen-Cjen Yong, Los Osos, both of Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Jan. 28, 1980, Ser. No. 116,299
Int. Cl.³ B65G 47/14
U.S. Cl. 198—443 **8 Claims**



1. A singulator comprising a table circular about a central, vertical axis; means for rotating said table about said axis; at least a pair of radial walls upstanding from said table and defining the sides of a radial pocket substantially at the periphery of said table away from a central table area; a pair of gates each respectively at the radially inner end of one of said pair of walls; means for moving said gates substantially simultaneously between a first position blocking entrance to said pocket from said central table area and a second position allowing entrance to said pocket from said central table area; means for closing the radially outer end of said pocket for a predetermined portion of the rotation of said table and for opening the radially outer end of said pocket for another portion of the rotation of said table; means for supplying objects to be singulated to said central table area; and means for receiving objects from the open radially outer end of said pocket.

4,279,337

POSITIVE DRIVE CONVEYOR SYSTEM

Joseph E. Kachnik, 3704 Highway 377 S., Fort Worth, Tex. 76116

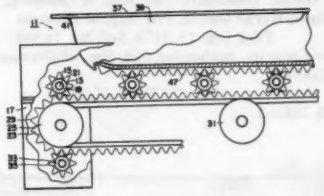
Filed Sep. 10, 1979, Ser. No. 73,905
Int. Cl.³ B65G 37/00
U.S. Cl. 198—472 **2 Claims**

1. A conveyor system comprising:

a plurality of spaced apart drive rollers, each drive roller having an axis parallel to the axes of the other drive rollers, each roller having two cylindrical portions separated by an annular row of teeth protruding past the cylindrical portions;

a belt mounted below the drive rollers on driven pulleys, the belt having a plurality of teeth on its outer surface for engaging the teeth of the drive rollers to rotate them;

an article carrier for supporting conveyed articles, the article carrier having a recessed channel on its bottom surface extending the length of the article carrier, with substantially flat surfaces on each side of the channel that are adapted to engage the cylindrical portions of the drive rollers, the channel having a row of teeth protruding



downwardly that is adapted to engage the teeth of the drive rollers, the teeth in the channel protruding downwardly no further than the depth of the channel;

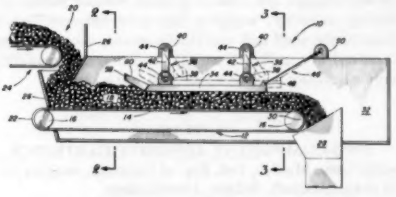
the article carrier comprising a tray having raised sides, the forward and rearward sides being inclined with respect to the bottom surface, with the teeth of the channel extending up the forward and rearward sides a selected distance to enable the conveyor system to change inclinations.

4,279,338

APPARATUS FOR SPLITTING A STREAM OF PARTICULATE SOLIDS

Robert H. Sekora, Greensburg, Pa., assignor to Conoco, Inc., Stamford, Conn.

Filed Nov. 23, 1979, Ser. No. 97,078
Int. Cl.³ B65G 47/19
U.S. Cl. 198—525 **5 Claims**



1. An apparatus for dividing a feed stream of particulate solids into a plurality of streams of said particulate solids, each of said plurality of streams constituting a predetermined portion of said feed stream, said apparatus comprising;

(a) a flat belt conveyor means adapted to convey particulate solids from a first end of said belt conveyor means toward a second end of said belt conveyor means;

(b) a substantially vertical sidewall positioned on each side of said belt conveyor;

(c) a leveler plate means pivotally positioned above said belt conveyor means to level said particulate solids on said belt conveyor means so that said particulate solids are of a uniform depth across the width of said belt conveyor, said leveler plate being of substantially the same width as said belt;

(d) a feeder means for charging said particulate solids to said belt conveyor means between said first end of said belt conveyor means and said leveler plate means;

(e) a receiver means for receiving said particulate solids from said second end of said belt conveyor means, said receiver means comprising a plurality of chutes for receiving said plurality of streams each of said streams constituting a predetermined portion of said feed stream, said predeter-

mined portion being a fractional portion of said feed stream determined by the ratio of the width of each chute to the width of said belt conveyor.

4,279,339

SHELL CONTAINER COMPRISING A CENTERING ASSEMBLY

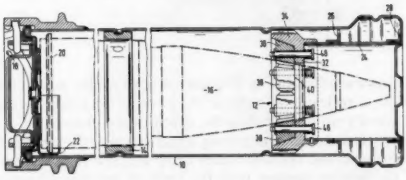
Eugen Gotter, Dusseldorf, Fed. Rep. of Germany, assignor to Hoffman-Werke GmbH, Fed. Rep. of Germany

Filed Sep. 13, 1979, Ser. No. 74,988

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1979, 2910126

Int. Cl.³ F42B *37/00*

U.S. Cl. 206—3 **9 Claims**



1. A container for supporting a shell having an ogive portion, said container comprising: a substantially tubular housing, a shell centering assembly having conical support surface means which are complementary to the ogive portion of the shell being centered thereby, and a sleeve means mounted in said housing and supporting said shell centering assembly within said housing, said shell centering assembly being radially expansible upon the application of an axial force in one direction and unable to radially expand upon the application of an axial force in the opposite direction, such that upon the insertion of the shell into said housing, the ogive portion of the shell will engage the conical support surface means of said centering assembly, wedging the same between the ogive portion of the shell and said sleeve means, whereas upon the withdrawal of the shell from said housing, said centering assembly is radially expansible to release the shell.

4,279,340

TWO-COMPONENT ADHESIVE CARTRIDGE

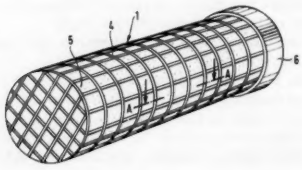
Gusztav Lang, Munich, Fed. Rep. of Germany, assignor to Hilti Aktiengesellschaft, Schaan, Liechtenstein

Filed Dec. 27, 1979, Ser. No. 107,551

Claims priority, application Fed. Rep. of Germany, Dec. 29, 1978, 2856735

Int. Cl.³ B65D *25/08*

U.S. Cl. 206—219 **8 Claims**



1. Two-component adhesive cartridge including a resin component and hardener component, a destructible container holding at least said resin component therein, wherein the improvement comprises that said destructible container includes a latticework frame having a plurality of openings therethrough, and a binder placed over said latticework frame covering said frame and closing the openings therethrough so that said latticework frame and binder form an imperforate wall for said container.

4,279,341

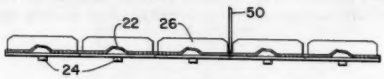
FASTENER STRIP

George C. Pleickhardt, Des Plaines, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Oct. 5, 1979, Ser. No. 81,738

Int. Cl.³ B65D *73/00, 83/00*

U.S. Cl. 206—345 **15 Claims**



1. A strip of at least two sheet metal fasteners each including a generally planar base portion having a fastener receiving opening therethrough, a pair of locating tabs struck from within the margins of said base portion and angularly spaced adjacent said opening, said tabs extending downwardly from one surface of said base portion, at least one manually grippable portion extending upwardly beyond the opposite surface of and fastened to said base portion, said base portion of each fastener having at least one edge being disposed in adjacent spaced relation to at least one complementary edge of the base portion of the next adjacent fastener, adjacent said fasteners being joined by two fracturable integral means that are laterally spaced a predetermined distance so that said strip is maintained as a rigid unit prior to fracture of said means, double faced adhesive foam type tape having a width less than said predetermined spaced relation and positioned between said fracturable means and extending over the entire cumulative length of said at least two fasteners and with one surface of said tape adhering to said one surface of said base portion, said tape being initially imperforate throughout the area covering said one surface and sealing said fastener receiving opening, said tabs extending through said foam tape and providing locating means, a non-adhering backing material covering the other face of said tape and being continuous throughout its length except for penetration by said tabs, whereby a slitting tool can be inserted between said fracturable means with said tape but not said backing material being transversely slit across its entire width at various axially spaced locations with one of said slits being disposed between each adjacent pair of said fasteners whereby an adjacent pair of fasteners can be separated by moving the adjacent bases into angular relation with respect to one another to break said fracturable means and then permit stripping of solely one of said fasteners from said non-adhering backing material to expose the second adhesive surface of said tape which is adapted for application in sealing relationship to a workpiece aperture which is located by said tabs to orient said fastener opening relative to said aperture in the workpiece.

4,279,342

LUNCH BOX EMPLOYING A BUILT-IN RADIO RECEIVER

Robert Van Pelt, 111 S. 3rd Ave., Highland Park, N.J. 08904

Filed Mar. 24, 1980, Ser. No. 132,778

Int. Cl.³ A45C *11/20*

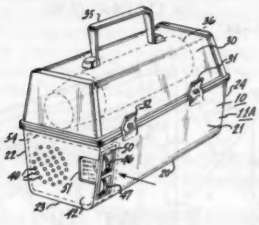
U.S. Cl. 206—542 **10 Claims**

1. A lunch box radio apparatus, comprising:

(a) a rigid box-like assembly having a bottom surface, first and second side surfaces, a front surface and a rear surface to form a box-like assembly having an internal hollow with a top open surface, one of said side surfaces as positioned between said front and rear surfaces having a plurality of sound emitting apertures located thereon, with said front surface having an aperture near said one side surface,

(b) a radio receiver positioned in said hollow and held adjacent said one side surface with a surface of said radio in

proximity with said apertures, and at least one control knob positioned adjacent said aperture in said front surface to enable a user of said lunch box to operate said radio via said aperture, and



(c) a cover member pivotally coupled to said rear surface for selectively covering and exposing said top open surface whereby said radio can be operated by said user independent of said cover member.

4,279,343

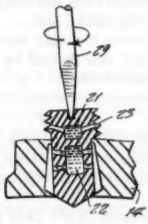
REPAIR KIT FOR TUBELESS TIRES

Teofilo Alfanta, 12961 Brown Ave., San Jose, Calif. 95111

Filed Jan. 25, 1980, Ser. No. 115,761

Int. Cl.³ B60C *21/06;* **B65D** *77/02*

U.S. Cl. 206—582 **3 Claims**



1. A repair kit for tubeless tires comprising, in combination, a case containing an assortment of different diameter plugs, so as to fit different sizes of puncture holes in a tubeless tire, each said plug comprising a screw of resilient material, a quantity of liquid rubber compound inside said screw, openings on said screw for discharge of said compound, and paper covers around said screw closing said openings.

4,279,344

HEAT-SEALABLE AND PEELABLE LAMINATED PACKAGING CONSTRUCTION

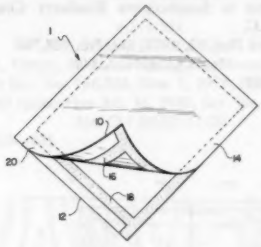
Fred W. Holloway, Jr., Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.

Filed Dec. 26, 1979, Ser. No. 106,906

Int. Cl.³ B65D *75/30, 75/32;* **B32B** *27/08;* **B65D** *17/00*

U.S. Cl. 206—631 **9 Claims**

1. A packaging construction, said construction comprising a pair of members fixed to one another, each of said members comprising an outer plastics resin protective layer, a central structural barrier layer and an inner plastics resin sealing layer, said inner plastics resin sealing layers being capable of being heat-sealed to one another and peelable under hand pressure and said inner plastics resin sealing layers being capable of withstanding retorting without damage to said heat seal, said inner plastics resin sealing layers being formed from polypropylene or a polypropylene-polyethylene co-polymer, including up to about 5 percent by weight polyethylene, blended with



between about 15 and 35 percent by weight of an ionomer resin.

4,279,345

HIGH SPEED PARTICLE SORTER USING A FIELD EMISSION ELECTRODE

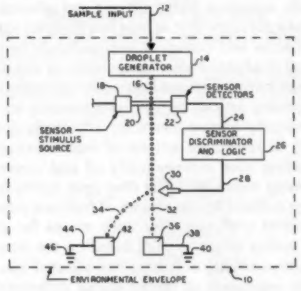
John C. Allred, 1393-A 40th St., Los Alamos, N. Mex. 87544

Filed Aug. 3, 1979, Ser. No. 63,461

The portion of the term of this patent subsequent to Jun. 27, 1995, has been disclaimed.

Int. Cl.³ B07C *5/342*

U.S. Cl. 209—3.2 **13 Claims**



1. An apparatus for analyzing and sorting small particles on the basis of preselected parameters or combinations of preselected parameters comprising:

generating means for segregating one of said particles in at least one liquid droplet;

sensing means downstream of said generating means for sensing the presence or absence of said preselected parameter of said particle;

flow means for passing said particles from said generating means to close proximity of an electrode, said electrode being located downstream of said sensing means;

discrimination means responsive to said sensing means and functionally connected to said electrode for selectively establishing a positive high potential electric field on said electrode when said particle is closely adjacent said electrode if said sensed particle displays said pre-selected parameter; and

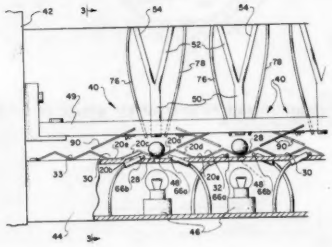
collection means located downstream of said electrode for receiving said particles.

4,279,346

ASYNCHRONOUS BLUEBERRY SORTER

William F. McClure, and Roger P. Rohrbach, both of Raleigh, N.C., assignors to Southeastern Blueberry Council, Inc., Goldsboro, N.C.

Filed Dec. 12, 1978, Ser. No. 968,768
Int. Cl.[3] B07C 5/342
U.S. Cl. 209—582 12 Claims



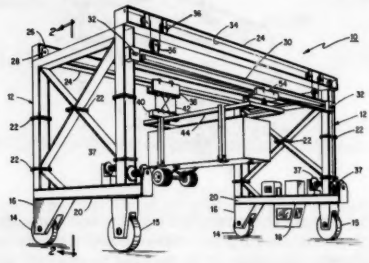
1. A high speed asynchronous fruit sorting apparatus for sorting aligned and randomly spaced articles of fruit according to maturity, comprising: a driven sorting conveyor assembly having a receiving end and a discharge end and comprising a generally open mesh type conveyor having a plurality of generally M-shaped profiles extending transversely across the conveyor so as to define a plurality of laterally spaced and longitudinally extending fruit receiving and selected maturity channels about the conveyor; at least one maturity sorting zone disposed adjacent said conveyor intermediately between said receiving and discharge ends of said conveyor and including a source of illumination disposed below said conveyor for illuminating the passing articles of fruit; said maturity sorting zone including maturity sensing means for effectively determining the maturity of respective articles of fruit conveyed to said maturity sorting zone independently of said conveyor, said maturity sensing means including fiber optic means for capturing light rays diffused by the articles of fruit and means operatively associated with said fiber optic means for generating differential optical density signals based on the transmittance of the respective articles of fruit at two selected wavelengths, whereby the magnitude of the produced differential optical density signal is related to maturity; an air ejection apparatus having at least two air jet nozzles disposed about each sorting zone and including a control circuit for actuating selected individual air jet nozzles; a maturity discriminator circuit operatively connected to the control circuit of said air ejection apparatus and adapted to receive said differential optical density signals and to effectively evaluate the signals to determine the maturity state of respective articles of fruit; and an asynchronous position detector apparatus disposed about each sorting zone for detecting oncoming articles of fruit and including an actuating control circuit responsive to the detection of oncoming articles of fruit for effectively actuating the maturity discriminator circuit so as to evaluate a certain differential optical density signal representative of a selected article of fruit at an appropriate time in order that the same may effectively actuate the control circuit of said air ejection apparatus such that either of said air ejector nozzles may be actuated in order to effectuate the transfer by air of an article of fruit to an appropriate adjacent channel on the M-shaped conveyor designated to receive that particular maturity grade.

4,279,347

ANTI-SWAY LOAD HANDLING APPARATUS

William S. Appleman, Durham, N.C., assignor to RPC Corporation, Roxboro, N.C.

Filed Sep. 12, 1979, Ser. No. 74,788
Int. Cl.[3] B66C 13/06
U.S. Cl. 212—147 23 Claims



18. An anti-sway device for a load handling apparatus comprising:

a first trolley movable laterally upon and connected to the load handling apparatus;

a stabilizing beam movable vertically on and connected to the load handling apparatus;

a second trolley movable laterally upon and connected to said stabilizing beam;

a load bearing means for bearing the load;

said load bearing means connected at one end to said second trolley to resist lateral sway and sway along the major axis of said load bearing means; and

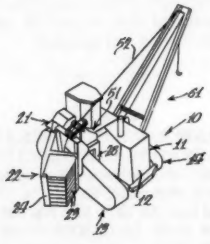
said load bearing means movable vertically from and connected at the other end thereof by reeving to said first trolley to resist lateral sway.

4,279,348

ADJUSTABLE DOUBLE LINK MOUNTING

Robert W. Harper, Metamora, and Robert A. Kleiber, Washington, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US79/00080, § 371 Date Feb. 9, 1979, § 102(e) Date Feb. 9, 1979, PCT Pub. No. WO80/01682, PCT Pub. Date Aug. 21, 1980
This PCT application filed Feb. 9, 1979, Ser. No. 23,198
Int. Cl.[3] B66C 23/76
U.S. Cl. 212—196 8 Claims



1. An adjustable double link mounting for mounting a first structure (37) removably to a second structure (51) in an accurately spaced relationship, comprising:

a pair of spaced-apart lugs (82,85) on one of said structures, each lug having a bore (100,103) defining an aperture;

a pair of interconnecting spaced-apart links (80,81) having a pivotal connection at one end to the other of said structures, and at the other end to a lug and provided by a pin-receiving opening (105,107) for receiving a pin (104,106) which extends through one of the apertured

lugs, one of said links having a fixed length at all times to define means for establishing a preselected accurate spacing of said second structure from said first structure when connected therebetween; and

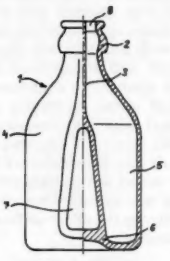
means (110,111,112) providing for adjustment of the length of the other of said links to align the opening thereof with the bore of the lug to which it is to be pinned with said one link free of stress tending to axially disalign the pin received thereby relative to the lug pin-receiving openings through which that pin extends.

4,279,349

BOTTLE WITH SEPARATE COMPARTMENTS

Robert Aigner, Wienerstr. 171, A-2352 Gumpoldskirchen, Austria

Filed Dec. 12, 1979, Ser. No. 102,783
Claims priority, application Austria, Dec. 21, 1978, 9128/78
Int. Cl.³ B65D *1/04*
U.S. Cl. 215—6 4 Claims



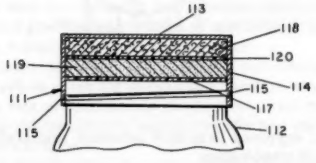
1. A bottle comprising a common bottom, a common neck, two separate compartments extending from the bottom to the neck, the bottom being common to the two separate compartments, and a partition extending from the bottom to the neck between the two separate compartments of the bottle, the partition below the neck and over a portion of the height of the bottle being bifurcated into two partition walls defining therebetween an elongate gap closed by the common bottom.

4,279,350

CLOSURE WITH OXYGEN SCAVENGING SYSTEM

Roderick V. King, Girard, Pa., assignor to Ethyl Corporation, Baton Rouge, La.

Filed Oct. 11, 1979, Ser. No. 83,977
Int. Cl.³ B65D *51/24*
U.S. Cl. 215—228 23 Claims



1. In combination a closure and a liner comprising,

a cup-like closure body having a closed end and a rim means on said closure body for removably attaching said closure to a container,

a liner in said cup-like closure body,

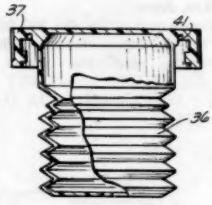
said liner comprising an oxygen permeable barrier layer adapted to rest on the open end of said container and a backing layer adapted to rest against the closed end of said closure and a layer of catalytic material disposed between said barrier and said backing and adapted to convert oxygen permeating said barrier layer to water.

4,279,351

CONTAINER CAP

Michael A. Vertes, 20 Tubbs Spring Ct., Weston, Conn. 06883

Division of Ser. No. 956,504, Nov. 1, 1978, Pat. No. 4,215,786.
This application Jul. 16, 1980, Ser. No. 169,433
Int. Cl.³ B65D *51/26*
U.S. Cl. 215—231 6 Claims



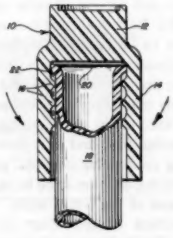
1. A container cap comprising a one-piece construction comprising a bellows and flange means integrally formed with and extending radially outwardly therefrom, and extending across the top of the container, further comprising a hollow cylindrical portion integrally connected at one end to the bellows and at the other end to the flange means, said flange means comprising means to engage the lip of a container so as to form a seal thereat with the bellows disposed within the container adjacent the container wall, whereby the bellows expands and contracts to contact the material within the container to limit movement thereof.

4,279,352

MOLDED INJECTION SITE

Gary A. Ward, Round Lake, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Continuation of Ser. No. 19,399, Mar. 12, 1979, abandoned. This application Mar. 13, 1980, Ser. No. 129,857
Int. Cl.³ B65D *41/20*
U.S. Cl. 215—247 5 Claims



1. A molded injection site, formed of self-sealing, needle-pierceable, resilient material, comprising a central needle-receiving portion and a tubular skirt portion contiguous therewith and extending in a first direction therefrom in its original, unstressed condition, said skirt portion surrounding and gripping the end of a support tube in telescoping relation thereto while extending in first direction, said skirt portion defining, on its inner surface, a plurality of sealing rings adapted to sealingly bear against said support tube, said support tube defining a flared end extending in annular relation outwardly from said tube in generally perpendicular relation thereto, said sealing rings being positioned all on one side of said flared end, said flared end being surrounded by said skirt, whereby, on the attempted removal of the injection site, the uppermost sealing

ring will engage the flared end of said support tube, preventing accidental removal of the injection site from the support tube.

4,279,353

PLASTIC BOTTLE CAP

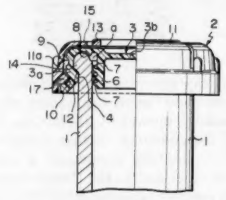
Zensho Honma, 1188, Nippa-cho, Kouhoku-ku, Yokohama-shi, Kanagawa-ken, Japan

Continuation-in-part of Ser. No. 897,806, Apr. 19, 1978, abandoned. This application Jan. 11, 1980, Ser. No. 111,369

Claims priority, application Japan, Apr. 23, 1977, 52/52540[U]; Jun. 27, 1977, 52/84533[U]

Int. Cl.³ B65D *41/52, 51/18*

U.S. Cl. 215—254 **3 Claims**



1. A tamper-indicating plastic bottle cap to be fitted to a bottle neck having a bead comprising:

an inner stopper member made of a flexible plastic material, said inner stopper member having a skirt portion provided with an annular radially inwardly projecting portion at the inside of the skirt portion for engaging over the bead of the bottle neck, and

an outer cap member made of a plastic material more rigid than that of the inner stopper member, said outer cap member being composed of an annular top portion and a skirt portion integrated with the annular top portion;

either the skirt portion of the inner stopper member or the skirt portion of the outer cap member having uniformly spaced first and second annular recesses formed therein, and the other having at least one annular radially projecting portion to be received within said first and second annular recesses;

said inner stopper member having an integrally formed downwardly extending inner cylinder, said inner cylinder being provided on its outer periphery with a plurality of spaced annular ribs; and said inner stopper member further having an annular ring-like projection on the lower surface of its top portion to be brought into sealing contact with the bead of the bottle neck;

said skirt portion of the inner stopper member having notches or slits at least at the lower portion of the outer skirt, and being broader toward the lower terminal edge thereof so that broadened portion forms a stopping shoulder on which the lower end of the skirt portion of the outer cap member is caught therein so as to avoid the risk of the outer cap member being inadvertently brought into a seal position relative to the inner stopper member before stoppering the bottle; and,

said outer cap member having a ring pull positioned within the annular top portion of the outer cap member, said ring pull being integrally formed with a portion of the annular top portion of the outer cap member and said portion of the annular top portion having slits or grooves forming score lines on both sides of said portion for easily breaking the outer cap member.

4,279,354

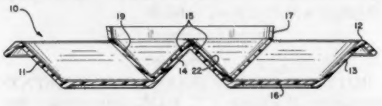
SERVING TRAY

Rino Conti, Stoughton, Mass., assignor to Dart Industries, Inc., Los Angeles, Calif.

Continuation of Ser. No. 11,243, Feb. 12, 1979, abandoned. This application Aug. 8, 1980, Ser. No. 176,365

Int. Cl.³ B65D *21/02*

U.S. Cl. 220—23.83 **10 Claims**



1. A combined serving tray arrangement adapted for the storage and service of foodstuffs and including a tray having a peripherally extending flange, inwardly inclined generally vertically extending side walls depending from said flange, a separator having bifurcated wall members integral with and extending between two opposed side walls, said separator having a vertical extent approximating the vertical extent of said opposed side walls and angularly disposed in like fashion thereto and a bottom wall arrangement interconnected with said side walls and separator, a container having a marginal brim, container wall means protruding downwardly therefrom, a base integral with said container wall means, said container wall means being of a size, shape and disposition so as to be cooperatively interengageable with said separator, and said container wall means being configured so as to generally be spaced from said bottom wall when said container is straddlingly engaged whereby the upper surface of the bottom wall is generally unobstructed.

4,279,355

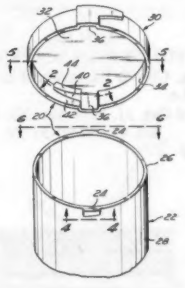
TWIST-LOCK CONTAINER

Edwin L. Schwartz, Los Angeles, and George E. Robson, Hermosa Beach, both of Calif., assignors to Rite Autotronics Corporation, Los Angeles, Calif.

Filed Apr. 11, 1980, Ser. No. 139,575

Int. Cl.³ B65D *41/06, 41/36*

U.S. Cl. 220—300 **8 Claims**



1. An improved twist-lock container, said container comprising, in combination:

an open topped hollow, generally cylindrical, container body bearing a spaced pair of tabs extending outwardly of the outer periphery of said container body adjacent the upper end thereof; and

an open-bottomed, generally cylindrical, flexible, resilient container cap releasably disposed on said upper end of said container body, said cap comprising a closed upper end and a depending annular sidewall connected thereto, said sidewall defining a pair of arcuate grooves in the inner surface thereof, adjacent the upper end thereof, said tabs being slidably disposed in said arcuate grooves, said

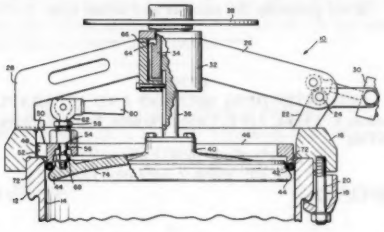
sidewall also defining on the inner surface thereof, a pair of about vertical grooves connected to said arcuate grooves and depending therefrom, the outer diameter between said vertical grooves being less than that between said tabs, said cap being sufficiently flexible to permit its temporary deformation to elongate said outer diameter between said vertical grooves to exceed that of said tabs, whereby said cap is removable from, and insertable on, said container body.

4,279,356

QUICK OPENING MANHOLE COVER ASSEMBLY

Franklyn J. Amorese, and Vincent J. Piarulli, both of Greece, N.Y., assignors to Sybron Corporation, Rochester, N.Y.

Filed Nov. 1, 1979, Ser. No. 90,287
Int. Cl.³ B65D *45/28*
U.S. Cl. 220—314 **15 Claims**



11. A quick opening manhole cover assembly for closing the manhole of a pressure vessel or the like comprising:

(a) a collar on said vessel about the manhole opening thereof, said collar having at least two spaced vertical slots and horizontal grooves in the inner periphery thereof, each slot communicating with one of said horizontal grooves;

(b) a manhole cover having an O.D. smaller than the I.D. of the manhole opening;

(c) a locking ring carried by and supported on said manhole cover, said locking ring being rotatably movable between defined limits with respect to said collar and manhole cover;

(d) at least two spaced ears extending radially from said locking ring, said ears adapted for reception first into said vertical slots and thereafter into a locked position in said horizontal grooves upon rotation of said locking ring with respect to said collar and manhole cover;

(e) first means extending from said collar and connected to said manhole cover for moving said manhole cover and locking ring as a unit axially into and out of the manhole opening and for carrying said ears axially into and out of said vertical slots;

(f) second means carried by said manhole cover and connected to said locking ring for moving said manhole cover axially within the manhole opening with respect to said locking ring when said ears are in said locked position;

(g) an annular seal member about the periphery of said manhole cover; and

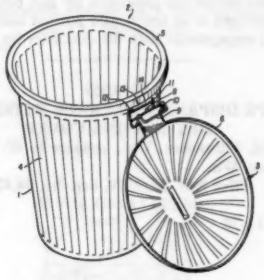
(h) an annular lip extending axially from said locking ring and about said manhole cover, said annular lip providing a seal seat for said annular seal member upon axial movement of said manhole cover towards said locking ring.

4,279,357

GARBAGE CAN ASSEMBLY WITH LID ANCHORING MEANS

William W. Robinson, 2237 Cambridge Blvd., Columbus, Ohio 43221

Filed Mar. 14, 1980, Ser. No. 130,571
Int. Cl.³ B65D *45/00*
U.S. Cl. 220—318 **8 Claims**



1. An improved garbage can assembly, comprising:

(a) a receptacle having an edge defining a mouth;

(b) a lid having a flange which is complementary to and engageable around said edge for covering said mouth;

(c) at least one handle pivotally mounted on a side wall of said receptacle adjacent to said edge, said handle having both a lid locking means for locking said lid over said mouth, and a closed loop structure for forming a hand grip, and

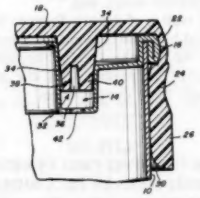
(d) a tab lock means connected to said lid and receivable into said closed loop of said handle for anchoring said lid to said handle when said lid flange is not engaged to said receptacle edge.

4,279,358

CONTAINER LID

Stanley A. Jacobs, 45 Kohary Dr., New Haven, Conn. 06515

Filed Aug. 6, 1979, Ser. No. 64,062
Int. Cl.³ B65D *45/34, 41/16, 43/10*
U.S. Cl. 220—321 **7 Claims**



1. A lid for a container having a sidewall and a lip protruding radially outwardly from the sidewall and extending about the periphery of the upper end of the container sidewall, the lid being formed from resilient plastic material and comprising:

a top wall;

a relatively thin sidewall web segment extending downwardly from the periphery of the top wall;

a relatively thick skirt integral with and extending downwardly from the lower end of the web, said skirt and web being dimensioned so that the skirt will display a greater resistance to radial expansion than the web;

the inner surface of the web defining a greater diameter than the inner surface of the skirt portion, thereby to define an inwardly-facing shoulder, the shoulder being spaced from

the underside of the lid top wall by an amount substantially equal to the height of the container lip;

whereby the lid may be snap-fitted onto the container;

said web being sufficiently thin, and being dimensioned with respect to the container lip so that snap-fitting of the lid onto the container will require the web to stretch heightwise and to deform to and wrap around the outer periphery of the container lip when the shoulder is engaged with the underside of the container lip, said skirt portion being disposed below the container lip and being constructed and arranged as to retain web portion into firm and snug sealing engagement with the container lip.

4,279,359

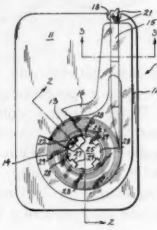
TAPE DISPENSER PACKAGE WITH ROLL RESTRAINING COVER

John Arnold, Milwaukee, Wis., assignor to W. H. Brady Co., Milwaukee, Wis.

Filed Nov. 15, 1979, Ser. No. 94,474

Int. Cl.³ B65D *85/672*

U.S. Cl. 221—70 **3 Claims**



1. In a tape package of the type comprising

(a) a base member, (b) a formed cover element having a housing portion, an exit section and a peripheral flange joined to the base member, and (c) a roll of adhesive tape carried in the housing portion with part of the tape unwound from the roll and extending through the exit section of the cover element,

the improvement wherein:

(1) the cover element is a sheet of plastic material thermoformed to include a housing portion having a top wall spaced from a bottom wall, and a vertical wall connecting the top and bottom walls, and

(2) said vertical wall is of dentate-form to have a plurality of teeth separated by radial inwardly-extending ribs, and the teeth engage the inner surface of the roll of tape to apply restraining force thereagainst as the roll rotates upon removal of tape from the package.

4,279,360

SYSTEM FOR FEEDING TWO SYNTHETIC-RESIN COMPONENTS TO A MOLD

Erhard Häuser, Schöffengrund, Fed. Rep. of Germany, assignor to Wilhelm Hedrich Vakuumanlagen GmbH & Co. K.G., Ehringshausen - Katzenfurt, Fed. Rep. of Germany

Filed Feb. 21, 1979, Ser. No. 13,075

Claims priority, application Fed. Rep. of Germany, Feb. 25, 1978, 2808183

Int. Cl.³ B67D *5/52*

U.S. Cl. 222—1 **11 Claims**

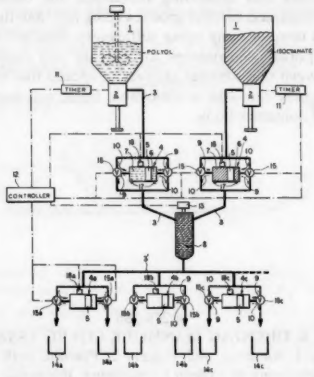
11. A synthetic-resin molding system comprising:

a supply containing a quantity of a fluid synthetic resin;

a conduit having an upstream end and a downstream end;

conveying means between said upstream end and said supply for feeding said resin from said supply to said upstream end at a predetermined and generally constant pumping volume/time rate;

measuring means in said conduit immediately upstream of said downstream end for measuring the downstream actual volume/time rate of flow of fluid in said conduit; and



control means connected to said conveying and measuring means for comparing said pumping rate with said actual rate and for generating an output when each pumping rate is not generally the same as said actual rate.

4,279,361

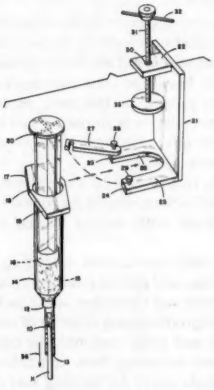
GEL EXTRUDING METHOD AND APPARATUS

Thomas Y. Chung, 126 E. Canon Perdido, Santa Barbara, Calif. 93101

Filed Jul. 16, 1979, Ser. No. 57,832

Int. Cl.³ B67B *7/00;* **G01F** *11/00*

U.S. Cl. 222—1 **2 Claims**



1. A method for removing gel from a tube provided with open ends, including the steps of:

(a) confining a substantially incompressible liquid in a syringe chamber having a plunger;

(b) placing one end of said tube in communication with the outlet of said syringe chamber;

(c) placing said syringe in a clamp structure in which an arm of said clamp threadedly mounts a shaft bearing against said plunger; and,

(d) gradually threading said shaft to move said plunger into said chamber and thereby force said liquid in a controlled manner into said one end of said tube to urge said liquid

against the gel and thereby extrude the gel from the opposite end of said tube.

2. An apparatus for extruding gel from a tube comprising, in combination:

(a) a syringe chamber and plunger;

(b) an incompressible fluid in said syringe chamber;

(c) a clamping frame having upper and lower arms, the lower arm being forked for receiving and supporting said syringe chamber in a position in which the syringe plunger extends upwardly towards said upper arm, said upper arm having a threaded opening therethrough;

(d) a pivotally mounted lock bar on said fork swingable to a position across the opening of the fork to secure said syringe chamber in the fork;

(e) a threaded shaft threadedly received in said opening;

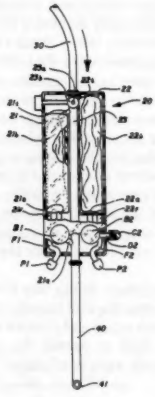
(f) a turning handle on the upper end of said shaft above said opening; and

(g) a pressure plate coupled to the lower end of said shaft and having an undercut cavity for receiving the upper end of said plunger when said syringe chamber is received in said lower arm so that controlled rotation of said shaft in a given direction moves said pressure plate and plunger downwardly, said cavity preventing lateral shifting of said plunger under load, so that by placing one end of said gel tube in communication with the outlet of said syringe chamber, liquid can be expelled from said chamber by rotating said turning handle in said given direction to force the liquid against the gel and extrude the gel from said tube in a controlled manner.

4,279,362
DISPENSING OF HYGIENIC FLUIDS

Grant W. Pursell, R.D. 1, Box 69C, Pittstown, N.J. 08867

Filed Jan. 26, 1979, Ser. No. 6,688
Int. Cl.[3] A61M 7/02; B65D 35/22
U.S. Cl. 222—94 13 Claims



1. A dispenser comprising a container including at least two separate compartments, each containing a storage member

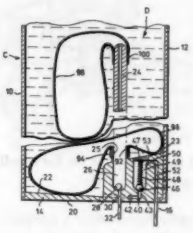
means for applying fluid pressure to the storage members comprising a conduit extending into, through and out of said container, said container having an inlet into each of said compartments, an outlet, and means for controlling the pressure applied to each storage member comprising a valve positioned in said fluid applying conduit between the inlets of said compartments;

whereby fluid pressure is fully applied to the storage member in one of the compartments and is applied to the storage member in another of said compartments according to the extent of the position of said valve which further controls the amount of fluid discharged at the outlet of said conduit.

4,279,363
NON-INVERTING FLUID DISPENSER

Raza Alikhan, 201 Willowridge Ct., Oakville, Ontario, Canada L6L 5J1

Continuation-in-part of Ser. No. 962, Jan. 5, 1979, abandoned.
This application Aug. 10, 1979, Ser. No. 65,574
Int. Cl.[3] B65D 35/22
U.S. Cl. 222—94 9 Claims



1. A dispenser adapted to be located in the bottom of a container of which at least a portion of a wall thereof is flexible, said container being adapted for dispensing a fluid material contained therein upon deformation of said flexible portion thereof, said dispenser comprising:

a base member secured fluid tight in the bottom of said container;

first passage means in said base member having a first valve means in fluid communication therewith, for establishing an equal pressure within said container with respect to the atmosphere exteriorly thereof, and an interior air vent tube having a length slightly less than the interior height of the container, so as to reach above the maximum level of the fluid therein when said container is filled to its maximum allowable limit; and

second passage means in said base member having a second valve means in fluid communication therewith, for dispensing said material from within said container through said second passage.

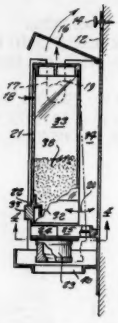
4,279,364
COFFEE DISPENSER CONTAINED INSIDE A WALL MOUNTED BRACKET

Sergio J. Perez, 311 W. 97th St., New York, N.Y. 10025

Filed Sep. 18, 1979, Ser. No. 76,579
Int. Cl.[3] B67D 5/64
U.S. Cl. 222—162 1 Claim

1. A coffee dispenser contained inside a wall mounted bracket comprising in combination, a bracket stationarily mounted on a wall; an elongated container suspended from its upper end in a box enclosing said container; said box having a rear wall and opposite side walls, and an upwardly pivotable top cover; said side walls extending forwardly farther than a front of said container, in order to fully enclose the same at each side; a lower end of said container being rearwardly pivotable toward said box rear wall; and means whereby coffee is dispensed from said container when said container is rearwardly pivoted; said means comprising a plate normally intercepting a vertical passage between a storage chamber and a downward spout of said container; a track and crosspiece abuts against said box rear wall; said track comprising rails that slide in grooves in the lower end of the container; said plate being connected to said crosspiece by rods; said plate extending horizontally through an intermediate portion of said container; said container being rearwardly slidable respective to said

plate in order to open said passage; and an elastic rubber band connected between said plate and the lower end of said con-



tainer urging said container into a forwardly pivoted position after being rearwardly pivoted.

4,279,365

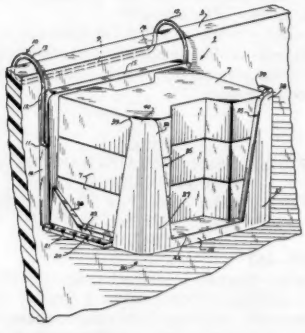
FISHING FLOAT CONTAINER

Joan K. Hutmacher, P.O. Box 73, 104 E. Fifth St., Mead, Nebr. 68041

Continuation of Ser. No. 71,630, Aug. 31, 1979, abandoned. This application Oct. 27, 1980, Ser. No. 200,707

Int. Cl.³ B60R *7/00*

U.S. Cl. 224—42.42 **7 Claims**



1. A fishing float container, comprising:

a container means for holding one or more fishing floats; and

a securing means for securing said container means to a wall of a boat, wherein said securing means is pivotally secured to said container means and includes: a large radius elbow for hanging over said wall of said boat in an upward hanging position and for extending along the sides of said container means in a downward storage position; and

an overlying means for preventing fishing floats from falling out of said container means when in the downward storage position, connected to the large radius elbow distal its pivotal securement and protruding substantially above said container means when in said downward storage position.

4,279,366

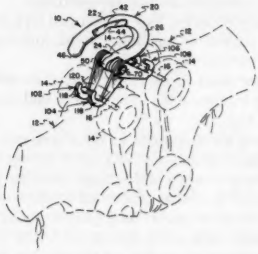
ROLLER SKATE CARRIER

Milton Kessler, 6690 Harrington Ave., Youngstown, Ohio 44512, and Ronald N. Kessler, 1161 Monsell Dr., Youngstown, Ohio 44505

Continuation-in-part of Ser. No. 76,191, Sep. 17, 1979. This application Apr. 18, 1980, Ser. No. 141,346

Int. Cl.³ B65D *71/00*

U.S. Cl. 294—162 **11 Claims**



1. A roller skate carrier, comprising:

(a) a handle having a hole formed therethrough;

(b) a shaft journaled in the hole and having opposed end regions projecting from opposite sides of the handle;

(c) four separately formed, substantially identically configured arm members carried on the shaft end regions and being drivingly connected thereto for rotation concurrently therewith, two of these arm members being located relatively inwardly near the handle, and the remaining two of the arm members being located relatively outwardly at farther distances from the handle;

(d) retaining means near opposite ends of the shaft for retaining the arm members on the shaft;

(e) biasing means interposed between the handle and between the inner arm members for biasing the inner arm members relatively away from the handle toward positions of engagement with the outer arm members, and for biasing the outer arm members toward positions of engagement with the retaining means;

(f) one of the inner arm members on one side of the handle and the outer arm member which is located on the opposite side of the handle having a pair of overlying hook-shaped formations configured to receive and grasp spaced portions of a rear axle of a skate;

(g) the other of the inner and outer arm members having a pair of hook-shaped formations configured to receive and grasp spaced portions of a rear skate axle of another skate; and,

(h) the arm members being slip-fitted onto the shaft end regions to enable the arm members to move independently relative to each other and relative to the shaft in directions axial of the shaft to permit the carrier to be used with skates of a wide variety of sizes.

4,279,367

MUSICAL INSTRUMENT HARNESS

Michael E. Jacobs, 1147 Goettingen St., San Francisco, Calif. 94134

Filed Jun. 26, 1979, Ser. No. 52,169

Int. Cl.³ A45F *5/00*

U.S. Cl. 224—257 **10 Claims**

1. A device for supporting and stabilizing an object in front of a user having a torso and at least one shoulder, the object having first and second spaced points of support comprising:

a first strap segment extending between said first and second points of support and sized to pass over said shoulder of said user;

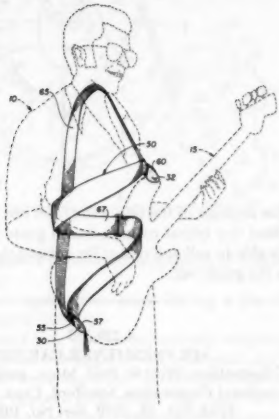
a second strap segment extending between said first and

second points of support and sized to wrap completely around said torso of said user;

each of said first and second strap segments having first and second ends;

first means for attaching said first ends of said first and second strap segments to said first point of support; and

second means for attaching said second ends of said first and second strap segments to said second point of support;



said first and second strap segments together comprising a single strap, said first attaching means comprising first and second fittings at opposite ends of said strap, and said second attaching means comprising a third fitting at an intermediate position on said strap to define said strap segments;

said first and second fittings each being adapted to mate with said first point of support, and said third fitting being adapted to mate with said second point of support.

4,279,368

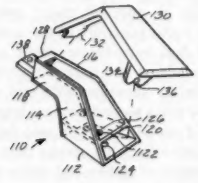
STANCHION ASSEMBLY

Daniel J. Kowalski, Ortonville, Mich., assignor to Four Star Corporation, Troy, Mich.

Continuation of Ser. No. 19,273, Mar. 9, 1979, abandoned. This application Aug. 22, 1980, Ser. No. 180,228

Int. Cl.³ B60R *9/04*

U.S. Cl. 224—326 **4 Claims**



1. A stanchion for an article carrier of the type including a hollow main body section adapted to be secured to a vehicle surface, the improvement comprising:

(a) the main body section including a base contained entirely within said main body section, the base having at least one aperture adapted to receive a fastener for mounting the stanchion to the vehicle surface, and

(b) a cap member removably secured to the main body section to enclose said base and to permit access to said fastener.

4,279,369

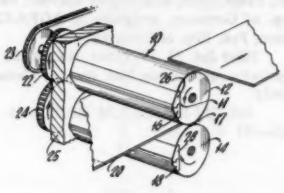
METHOD AND APPARATUS FOR PARTITIONING AND SHAPING A FIBROUS BATT

Anthony Passafiume, Burbank, Ill., assignor to Johnson & Johnson Baby Products Company, New Brunswick, N.J.

Filed Jun. 25, 1979, Ser. No. 51,562

Int. Cl.³ B26F *3/02*

U.S. Cl. 225—3 **31 Claims**



1. A method for shaping a web comprising: conveying a web in a direction, gripping the web along a first path with a resilient means engaging a first surface of the web and non-resilient means engaging the second surface of the web, substantially immediately thereafter gripping the web along a second path immediately adjacent said first path with a non-resilient means engaging said first surface of the web and resilient means engaging the second surface of the web, substantially immediately thereafter displacing said first and second path with respect to each other from the plane of the web and on opposite sides of said plane, and releasing the web to provide a shaped web.

4,279,370

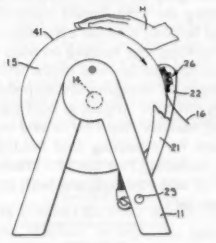
DISPENSER FOR ROLLED SHEET MATERIAL

Donald W. Lash, 2450 E. Collier, Kentwood, Mich. 49506

Filed Aug. 23, 1979, Ser. No. 69,201

Int. Cl.³ B26F *3/02;* **B65H** *35/04*

U.S. Cl. 225—67 **5 Claims**



1. In a device for severing a piece of sheet material from a roll thereof, including a frame means for rotatably supporting said roll, a cutter bar having leading and trailing edges, said leading edge having sheet severing means, means movably mounting said cutter bar on said frame means substantially parallel with the axis of said roll and means resiliently urging said cutter bar toward the periphery of the roll, the improvement comprising:

a smooth surfaced standoff means fixed to the cutter bar and spaced from said severing means, said standoff means protruding from said cutter bar to bear on the periphery of the roll and hold the trailing edge of the cutter bar out of engagement with the periphery of the roll so as to allow the free end portion of the sheet material to be drawn from the roll and thereafter severed by said cutting edge, the

contact area of said standoff means with the roll periphery being small compared to the surface area of the trailing edge of the cutter bar, said standoff means comprising a convexly rounded semispherical head opposing said roll for riding thereon, and means fixedly securing said head to said cutter bar to protrude from said cutter bar toward said roll.

4,279,371

ARRANGEMENT FOR TRANSPORTING STRIP-SHAPED MATERIAL

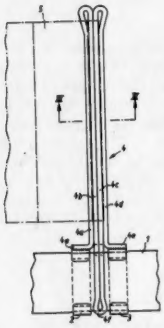
Erwin Laar, Taufkirchen, and Werner Sperber, Munich, both of Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Filed Jul. 23, 1979, Ser. No. 60,238

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1978, 2833432

Int. Cl.³ B65H *17/24;* **G03B** *1/56*

U.S. Cl. 226—91 **7 Claims**



1. An arrangement for transporting strip-shaped material, particularly photographic paper, comprising a conveyor belt; means for holding the strip-shaped material, including a one-piece elongated holding element extending along a triple-turn hairpin course to form four holding sections which are substantially parallel to one another and define with each other three spaces for clampingly engaging the strip-shaped material, said sections having effective lengths at least equal to the width of the strip-shaped material and two of said sections having free ends; and means for attaching said holding element to said conveyor belt, including two discrete brackets each affixed to a different one of said free ends and both separably connected to said conveyor belt.

4,279,372

APPARATUS FOR LIMITING THE SIZE OF TURNS OF A HELICALLY FORMED LONG PRODUCT

Marcel A. P. Giros, Rte. de Saint-Dizier, 55170 Ancerville, France

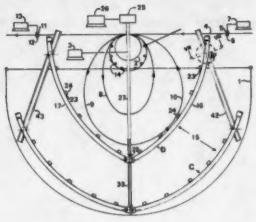
Filed Jul. 20, 1979, Ser. No. 59,476

Claims priority, application France, Sep. 21, 1978, 78 27461

Int. Cl.³ B65H *17/42;* **G11B** *15/56*

U.S. Cl. 226—118 **11 Claims**

1. Apparatus for the mechanical, chemical or electrolytic treatment of a long, flexible and deformable product such as a strip, tube or wire, brought into the form of helical turns, comprising at least one treatment chamber, at least one shaft supporting the product, means for assuring the rotation of the supporting shaft, means for bringing the long product on the shaft and means for extracting said product therefrom, and adjustable means for limiting the size of the turns of the helix, wherein said adjustable means comprise a cage having two side walls of at least four members which are symmetrical in pairs, said cage having a bottom cage girder, and said at least four members pivoted on the bottom cage girder, a plurality of parallel bearers mounted on the members, and means for modifying the distance of the side walls from one another comprising at least one lateral roller, a lateral guide rail on which the roller is able to roll and means for causing the lateral roller to roll on the guide rail.



4,279,373

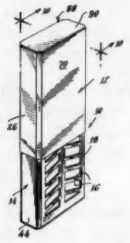
AIR FRESHENER CARTON

James Montealegre, West St. Paul, Minn., assignor to Champion International Corporation, Stamford, Conn.

Filed Dec. 28, 1979, Ser. No. 108,005

Int. Cl.³ B65D *13/06, 5/38;* **A61L** *9/04*

U.S. Cl. 229—11 **4 Claims**



1. A carton for dispensing an active material to the atmosphere comprising:

a first, imperforate sleeve forming an outer carton unit, said first sleeve being a sealed closure on one end thereof, and

a second sleeve forming an inner carton unit having a plurality of openings on opposed major panels thereof, said second sleeve being generally of the same cross-sectional shape as said first imperforate sleeve and being nested within said first sleeve and slidable therein between a first position defined by abutment with said sealed closure of said first sleeve and a second position intermediate the end containing said sealed closure of said first sleeve and the opposite end thereof so that certain ones of said openings in the major panels of said second sleeve unit can be selectively exposed to the atmosphere,

a sealed closure on said second inner carton sleeve containing a panel extending laterally and linearly outwardly beyond side edges connecting said major panels of said second sleeve, and

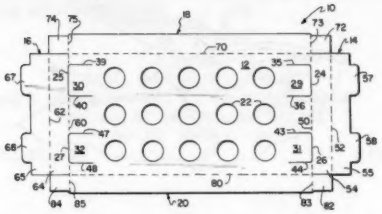
a locking tab on the bottom edge of the outer first sleeve adapted to contact the opposite edges of the panel extending outwardly laterally and linearly beyond the side edges connecting said major panels of said second unit to preclude disassembly of said first and second sleeves.

4,279,374

ADHESIVE-FREE TRAY WITH INTERLOCKING TABS AND BLANK THEREFOR

George Webinger, Minneapolis, Minn., assignor to Champion International Corporation, Stamford, Conn.

Filed Nov. 13, 1979, Ser. No. 93,927
Int. Cl.[3] B65D 5/22, 45/22, 85/36
U.S. Cl. 229—34 R 2 Claims



1. A unitary blank of paperboard adapted to be erected into a tray comprising:

a generally rectangular main panel having a plurality of apertures located therein;

a pair of opposed side panels respectively hingedly connected to opposed side edges of said main panel, with each said side panel including a pair of end tabs hingedly connected to the opposed ends of said side panel; and

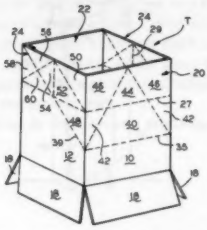
a pair of opposed end panels respectively hingedly connected to the opposed remaining edges of said main panel, with each said end panel including a fold line extending parallel to said hinged connection between said end panel and said main panel, said fold line dividing said end panel into first and second portions of equal width, with said first portion being disposed adjacent said main panel, and with each said end panel further including two standing tabs connected to the opposed free edge of said second portion, and wherein said main panel further includes two pairs of opposed locking tabs respectively disposed adjacent said opposed ends of said main panel, with each said pair of locking tabs being aligned with a pair of standing tabs of one of said end panels, with a portion of each said locking tab being defined by a first cut line, disposed coincident with said hinged connection between said main panel and said end panel, each said first cut line defining the locking edge of the associated locking tab, and with the remainder of each said locking tab being defined by a pair of spaced apart cut lines formed in said main panel and extending from the opposed ends of the associated first cut line and away from said end panel whereby when said tray is erected from said blank, said side panels are rotated into an upstanding position relative to said main panel, while said end tabs thereof are rotated perpendicular to the plane of said side panels and colinear with said hinged connection between said main panel and said end panels, whereupon each said end panel is rotated into an upstanding position about its hinged connection to said main panel such that said second portion may be further rotated inwardly and into coplanar relationship with said first portion, with said end tabs of said side panel being interposed between said first and second portions, said standing tabs being operative to bias said locking tabs downwardly enabling said standing tabs to project downwardly through the plane of said main panel and wherein after said folding is completed, the locking tabs are disposed in coplanar relationship with said main panel such that the locking edges thereof are disposed in frictional engagement with the associated end panel thereby structurally rigidifying said tray and preventing the unfolding of said end panels.

4,279,375

SHIPPING-DISPLAY CONTAINER

Jeffrey M. Gardner, Wheaton, Ill., assignor to Container Corporation of America, Chicago, Ill.

Filed Feb. 11, 1980, Ser. No. 120,358
Int. Cl.[3] B65D 5/02
U.S. Cl. 229—37 R 2 Claims



1. A collapsible container, formed of foldable paperboard, which can be folded in one way to provide a closed structure for shipping purposes and which can be alternately folded in another way to provide an open structure for display purposes, comprising:

(a) a pair of opposed front and rear walls and a pair of side walls foldably joined to form a tubular structure open at the ends;

(b) means for closing the lower end of the container;

(c) front, rear, and side closure flaps foldably joined to upper edges of said front, rear, and side walls, respectively, and adapted to be folded into overlapped relation to provide a closure arrangement for the upper end of the container;

(d) said closure flaps foldably joined to each other with said side closure flaps including fold lines which permit the closure flaps to be folded into a bellows type closure arrangement;

(e) said front and side walls and the closure flaps joined thereto including additional fold lines which permit the upper portion to be alternately folded into a chair-shaped shelf arrangement; and

(f) said additional fold lines including:

(i) a fold line extending transversely across said front wall between the sides thereof intermediate and parallel to the upper and lower edges of said front wall; and

(ii) a fold line in each side wall and side closure flap extending diagonally upward and rearward from said transverse fold line to the rear upper corner of said side closure flap.

4,279,376

CARTON WITH UNOBTRUSIVE HANGING PANEL

Harry I. Roccaforte, Western Springs, Ill., assignor to Champion International Corporation, Stamford, Conn.

Filed Apr. 4, 1980, Ser. No. 137,451
Int. Cl.[3] B65D 5/18
U.S. Cl. 229—38 6 Claims

1. A one-piece paperboard carton blank from which may be erected a carton having an unobtrusive integral panel to hang the carton, the said blank comprising, in sequence arranged along a common axis;

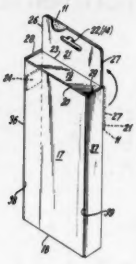
a reinforcement panel having a hole therethrough, a rectangular bottom panel connected by a back fold and score line to said reinforcement panel,

a rectangular first side panel connected by a fold line to said bottom panel, a rectangular top panel connected by a fold line to said rectangular first side panel, a rectangular second side panel connected by a fold line to the top panel;

a hanging panel connected to said second side panel by a fold line, said hanging panel having a hole therethrough to

align with the hole in the reinforcement panel and by which the carton may be hung;

and, in addition and not on said axis, opposite pairs of side flaps connected by fold lines to at least two of said panels;



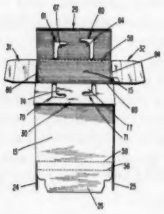
and a pair of side flaps connected at opposite sides of said hanging panel by breakable score lines.

4,279,377

CARTON WITH SELF-LOCKING TOP AND BOTTOM CLOSURE FLAPS AND BLANK THEREFOR

Dick E. Peeples, Capitola, and Mervin Lohrbach, Anaheim, both of Calif., assignors to Champion International Corporation, Stamford, Conn.

Filed Nov. 15, 1979, Ser. No. 94,492
Int. Cl.³ B65D 5/10
U.S. Cl. 229—39 R **8 Claims**



1. A unitary paperboard blank adapted to form a carton comprising:

a front panel, a first side panel, a rear panel, a second side panel and a glue flap hingedly coupled in series along parallel fold lines; and

four bottom closure flaps hingedly coupled to the bottoms of said panels along fold lines, said four bottom closure flaps comprising

a first flap hingedly coupled to said rear panel and having a first set of two L-shaped slits therein,

a second flap hingedly coupled to said front panel and having a second set of two L-shaped slits therein, and wherein each said L-shaped slit of said first and second flaps includes a first leg extending perpendicular to said fold lines hingedly coupling said first and second flaps to said rear and front panels, and a second leg extending perpendicular to said first leg,

a third flap hingedly coupled to said first side panel, and

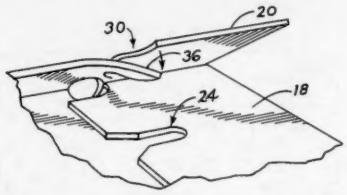
a fourth flap hingedly coupled to said second side panel.

4,279,378

TOP GAP FOLDING BOX HAVING A TOP CLOSURE INTERLOCK

Donald E. Jenkins, Orange, Calif., assignor to Willamette Industries, Inc., Portland, Oreg.

Filed Nov. 19, 1979, Ser. No. 95,403
Int. Cl.³ B65D 5/10
U.S. Cl. 229—39 R **8 Claims**



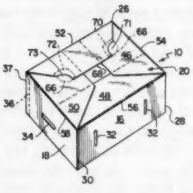
1. A top folding box having a bottom, four side walls and a top closure, being integrally formed of stiff sheet material, the top closure comprising a flap hinged to the top edge of each of the side walls, each flap having a pair of incisions therein, the incisions extending from the outer edge of the flap generally toward the edge hinged to the side wall, each incision configured and dimensioned to be engageable with an associated incision on the adjacent flap.

4,279,379

CARTON WITH SELF-LOCKING END CLOSURE AND BLANK FOR FORMING SAME

Mervin Lohrbach, Garden Grove, and Dick E. Peeples, Capitola, both of Calif., assignors to Champion International Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 94,492, Nov. 15, 1979. This application May 23, 1980, Ser. No. 152,736
Int. Cl.³ B65D 5/10
U.S. Cl. 229—39 R **2 Claims**



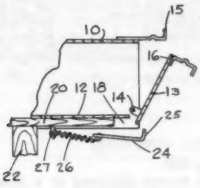
1. A planar, unitary blank for forming a carton with a self-locking end closure comprising:

first, second, third and fourth side panels hingedly coupled in series at adjacent side edges thereof along fold lines; and

first, second, third and fourth closure flaps hingedly coupled to said first, second, third and fourth side panels, respectively, at adjacent end edges thereof along fold lines, said first flap having a base portion adjacent said first panel and a locking tab remote from said first panel, said base portion being substantially in the form of an isoceles trapezoid tapering in a direction away from said first panel, and with said locking tab being substantially rectangular and tapered at its free end thereof in a direction away from said first panel, said first flap being free of fold lines, and with each of said second and fourth flaps having an L-shaped slit therein, said L-shaped slits being located such that when said carton is erected from said planar blank, with said opposed free edges of said first and fourth side panels being connected such that said side panels form a tubular side wall, and when said second flap is rotated into coplanar relationship with said fourth flap, such that said sec-

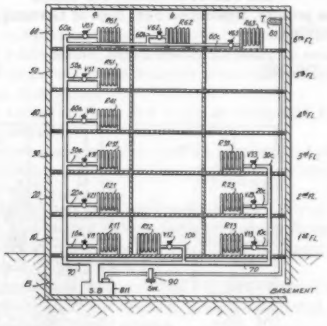
ond and fourth flaps are perpendicular to said side panels and overlie and are coplanar with said third flap, the spacing between said L-shaped slits is substantially similar to the width of said tapered locking tab of said first flap whereby said carton can be readily closed by rotating said first flap into said carton, with said tapered sides of said base portion of said first flap being operative to prevent interference between said first flap and said second and fourth flaps, thereby enabling said tapered sides of said locking tab to be received in said L-shaped slits for locking said erected carton.

4,279,380
MAIL BOX SIGNAL UNIT
Douglas P. Husted, 909 Rose La., Hatfield, Pa. 19440
Filed Jan. 31, 1980, Ser. No. 117,262
Int. Cl.³ B65D *91/00*
U.S. Cl. 232—35 **5 Claims**



1. A signal unit which will drop down to a clearly visible suspended position below a mailbox from a normally hidden location close to the mailbox when the door of the mailbox is opened and dislodges it, which comprises a plate having an upturned lip at one edge to frictionally bear on the door of the mailbox, a tension spring attached at one of its ends to the plate edge opposite from said lip and attachment means for securing the opposite end of the spring to the mailbox to place the spring in tension and draw the lip against the door.

4,279,381
METHOD FOR UNIFORMLY HEATING A MULTI-LEVEL BUILDING
Yang Yueh, 209-03 White Hall Ter., Queens Village, N.Y. 11427
Filed Sep. 28, 1979, Ser. No. 80,129
Int. Cl.³ F24D *3/00*
U.S. Cl. 237—81 **1 Claim**



1. A method for regulating and controlling the temperature at various locations of a multi-level building that is heated from a thermostatically controlled common heating source and delivers a heating fluid to rooms being heated by means of conduits that extend from the heating source to a plurality of heating units each having an adjustable control valve associated therewith at each of the locations and by utilizing only a single thermostat, said method comprising the steps of:

(a) positioning the thermostat in the room that is at the end of the conduit most remote from the heating source;

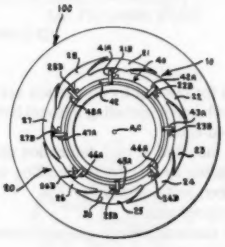
(b) setting the thermostat at the desired set point temperature position;

(c) opening the valve associated with the heating unit most remote from the heating source to its maximum extent while retaining the remaining valves in a first position;

(d) adjusting each of the remaining valves to a second position such that the flow of a heating fluid to each heating unit is less in rooms further away from the thermostat whereby the set point temperature, is maintained substantially in all of the rooms; and

(e) fixing the valves in their second positions.

4,279,382
RADIAL AND AXIAL FLOW VARIABLE EXHAUST NOZZLE FOR A GAS TURBINE ENGINE
Paul Wilson, Jr., Lake Park, Fla., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Jan. 28, 1980, Ser. No. 115,847
Int. Cl.³ B05B *17/04*
U.S. Cl. 239—11 **1 Claim**



1. A method of providing minimum thrust at idle speed, and maximum thrust with minimum losses at speeds above idle speed, with a gas turbine engine having an exhaust nozzle, wherein said gas turbine engine is operable at idle speed and also at speeds above idle speed, and wherein said gas turbine engine generates exhaust gases whenever it is operated, with said exhaust gases flowing into and out of said exhaust nozzle, and also wherein said gas turbine engine and said exhaust nozzle each has a centrally located longitudinal axis which are coincident, and further wherein said exhaust nozzle comprises a plurality of adjacent, successively overlapping, pivotable, axially extending, aerodynamically configurated, and annularly disposed constituent members, and has an axially aligned rearwardly located exit opening, comprising the steps of:

a. pivoting said exhaust nozzle constituent members to an open position during operation of said gas turbine engine at idle speed, whereby said exhaust gases formed by said operating gas turbine engine flow overboard from said exhaust nozzle, between said opened members, in radial directions;

b. and, pivoting said exhaust nozzle constituent members to a closed position during operation of said gas turbine engine at a speed above idle speed, whereby said exhaust gases formed by said operating gas turbine engine flow overboard from said exhaust nozzle in an axial direction through said axially aligned rearwardly located exit opening of said exhaust nozzle.

4,279,383

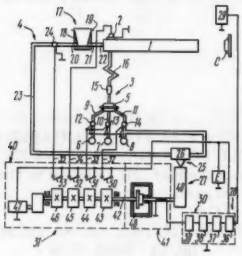
APPARATUS FOR COATING BY DETONATION WAVES

Anatoly I. Zverev, ulitsa Bratislavskaya, 26, kv. 22; Evgeny A. Astakhov, ulitsa Vyborgskaya, 89a, kv. 46; Valery S. Klimenko, ulitsa Shepeleva, 14, kv. 9; Vasily G. Skadin, prospekt Malinovskogo, 7, kv. 50, all of Kiev, and Mikhail A. Timoshin, Setunsky proezd, 4, kv. 24, Moscow, all of U.S.S.R.

Filed Mar. 12, 1979, Ser. No. 19,754

Int. Cl.[3] B05B 7/22

U.S. Cl. 239—61 7 Claims



1. Apparatus for coating by detonation waves comprising:

a detonation chamber including a barrel having an open end and a closed end;

a spark plug mounted in said detonation chamber;

a powder feeding system communicating with said detonation chamber, and comprising:

a source of carrier gas;

a gas conduit communicating with said source of carrier gas; and

a batchmeter comprising a hopper having a first inlet for charging powdered coating material, a second inlet connected with said gas conduit, and an outlet connected with said detonation chamber;

a carrier gas feed controller having a control member mounted on said gas conduit, and an actuating mechanism connected with the control member;

a gaseous mixture delivering system comprising a mixer communicating with the detonation chamber;

a control system electrically connected with the mixer, the batchmeter, and the carrier gas feed controller, and comprising a powder detector for detecting powder in the detonation products and mounted at the open end of said barrel;

a transducer for converting a detector signal and electrically connected with said powder detector;

a control unit comprising a driver unit electrically connected with said mixer, said spark plug and said batchmeter, and a threshold element for switching on said actuating mechanism of said carrier gas feed controller, said threshold element having an input connected to said transducer and an output electrically connected with said actuating mechanism of said carrier gas feed controller; and

control circuits of the mixer, of the spark plug and of the batchmeter connecting said driver unit of said control unit with said mixer, said spark plug and said batchmeter respectively.

4,279,384

STEAM GENERATION IN A DISHWASHER

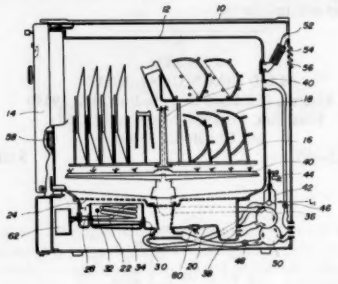
Kunio Yamamoto, Daito, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 5, 1979, Ser. No. 54,919

Claims priority, application Japan, Jul. 5, 1978, 53-93311[U]; Sep. 20, 1978, 53-129714[U]

Int. Cl.[3] A01G 27/00

U.S. Cl. 239—67 13 Claims



1. A dishwasher comprising

a dishwashing tub;

an immersion heater disposed at a lower section of said dishwashing tub for heating up water and generating steam;

a heater cover for substantially surrounding said immersion heater, said heater cover having a bottom-free end portion and an upper free end portion;

said bottom free end portion and the bottom wall of the dishwashing tub defining a gap therebetween for providing communication between said immersion heater and said dishwashing tub, external of said heater cover;

said upper free end portion of said heater cover providing communication between said immersion heater and the upper section of said dishwashing tub.

4,279,385

HIGH PRESSURE FUEL INJECTION APPARATUS FOR INTERNAL COMBUSTION ENGINES

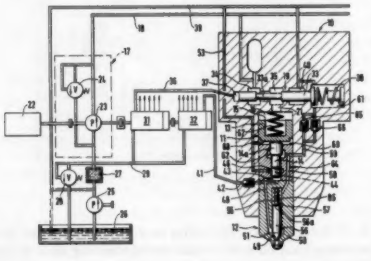
Max Straubel, and Willi Voit, both of Stuttgart, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 9, 1979, Ser. No. 11,024

Claims priority, application Fed. Rep. of Germany, Feb. 11, 1978, 2805785

Int. Cl.[3] F02M 32/02, 47/02

U.S. Cl. 239—90 13 Claims



1. In a hydraulically driven piston pump and nozzle assembly for a high pressure fuel injection system of an internal combustion engine, including: a pump piston; a servo piston

having two end faces and a diameter larger than the diameter of the pump piston, said servo piston serving to drive the pump piston; a servo pressure chamber partly defined by one end face of the servo piston, said servo pressure chamber being placed under servo pressure in synchronization with the engine operation; an intermediate chamber partly defined by the other end face of the servo piston, said intermediate chamber pressure relieved during at least the greater portion of the pump piston stroke; a spring chamber; a closing spring disposed within the spring chamber; means defining a valve seat; a valve needle biased by the closing spring in the direction of fuel flow and against the valve seat; a closing pressure chamber disposed in the vicinity of the valve needle end remote from the valve seat; and an overflow channel connected to the closing pressure chamber through which fuel at elevated pressure is conducted to the closing chamber, the improvement comprising:

an auxiliary pump chamber; and

an auxiliary pump piston axially movable within said auxiliary pump chamber, driven together with the pump piston and defining an effective work surface, wherein:

(i) the closing pressure chamber communicates through the overflow channel with the auxiliary pump chamber;

(ii) the auxiliary pump chamber is subjected to the effective work surface of the auxiliary pump piston; and

(iii) the auxiliary pump chamber is placed under elevated fuel pressure, at the latest, shortly before the end of the pressure stroke of the pump piston.

4,279,386

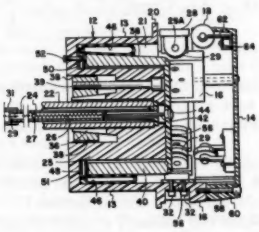
COMPACT PNEUMATIC REEL LATCH

Mark A. Lobo, and Richard W. Pembroke, both of Tulsa, Okla., assignors to Telex Computer Products, Inc., Tulsa, Okla.

Filed Apr. 14, 1980, Ser. No. 140,192

Int. Cl.³ B65H *17/02*

U.S. Cl. 242—68.3 **2 Claims**



1. A compact pneumatic reel latch for a magnetic tape deck having a drive shaft, said drive shaft having an axial opening therethrough, and means to supply pressurized air through said opening, comprising;

(a) a cylindrical hub, and means to clamp said hub to said drive shaft;

(b) an annular groove cut into the proximal end of said hub, forming an inner cylindrical surface and an outer cylindrical shell;

(c) a cuplike piston adapted to fit loosely inside of said annular groove, and rolling diaphragm means to seal between the outer surface of said piston and the inner surface of said cylindrical shell;

(d) means to apply pressurized air to the inside of said piston through said axial opening, thereby said piston will move axially out of said groove;

(e) elongatable elastic means inside said axial opening, the distal end of said elastic means anchored behind said hub, the proximal end attached to the inside of said piston;

whereby said piston is withdrawn back into said groove by said elastic means when said pressurized air is removed from the inside of said piston;

(f) a plurality of circumferentially spaced sloping flat lands provided on the outer surface of said piston;

(g) a plurality of circumferentially spaced first roller/friction pad means, supported by circumferential spring means; each of said roller/friction pad means running on one of said sloping lands;

whereby when said piston is moved out of said annular groove by said pressurized air, each of said circumferentially spaced roller/friction pad means, running on said sloping lands, will move radially outwardly;

whereby, when a tape reel hub is positioned over said plurality of roller/friction pad means, said roller/friction pad means will press on the inside surface of said reel hub causing it to rotate with said hub.

4,279,387

BAIL LATCHING AND RELEASING MECHANISM FOR SPINNING REEL

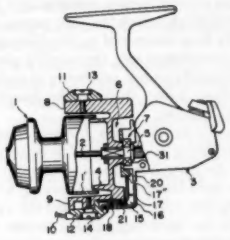
Yoshinori Morimoto, Fuchu, Japan, assignor to Ryobi Ltd., Fuchu, Japan

Filed Dec. 6, 1979, Ser. No. 101,039

Claims priority, application Japan, Dec. 18, 1978, 53-174561[U]; Dec. 18, 1978, 53-174562[U]

Int. Cl.³ A01K *89/01*

U.S. Cl. 242—84.2 G **9 Claims**



1. In an arm-spool type spinning reel including a bail arm pivotally mounted at both ends on support housings each positioned at diametrically opposite sides of a rotor for swinging movement thereacross between cocked and rewind positions, bail support members including a bail arm cam and a bail arm lever, said bail arm cam pivotably mounted on one of said support housings to support one end of said bail arm and said bail arm lever pivotably mounted on other of said support housing to support the other end of said bail arm, the improvement comprising; a bail arm latching and releasing mechanism assembled in either one of said support housings, said bail arm latching and releasing mechanism comprising:

(a) a kick lever pivotably secured to said one of said support housings,

(b) a dead point spring having one end connected to said kick lever and the other end connected to one of said bail support members disposed in said one of said support housings to bias said bail arm toward cocked and rewind positions, said dead point spring having dead point between bail arm cocked and rewind positions, and

(c) an operation cam secured to a stationary portion of a reel body, said operation cam being adapted to pivot said kick lever when said bail arm is at fishing line cocked position to urge said bail arm from its cocked to rewind position.

4,279,388

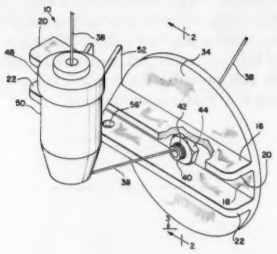
COMBINATION MOUNTING BRACKET, BALL TENSION AND BALLOON CONTROL DEVICE

Edward J. McBride, Jr., P.O. Box 311, Moorestown, N.J. 08057

Continuation of Ser. No. 29,220, Apr. 12, 1979, abandoned. This application Aug. 21, 1980, Ser. No. 180,164

Int. Cl.³ B65H *59/22*

U.S. Cl. 242—152.1 **6 Claims**



1. In a device for feeding yarn to a textile machine, the combination of

mounting bracket means adapted to affix the device to the machine,

said mounting bracket means comprising a mounting bracket having a longitudinal, generally horizontal axis and being adapted for interconnecting the mounting bracket to a stationary portion of the textile machine;

balloon control means supported by the mounting bracket means to control ballooning of the yarn as the yarn is fed to the textile machine,

said balloon control means comprising a hollow cylindrical conduit through which the yarn passes, said conduit being relatively long compared to the diameter of the yarn and having a horizontal axis, the vertical plane drawn through the horizontal conduit axis being at right angles to a horizontal plane drawn through the longitudinal axis of the mounting bracket,

said balloon control means further comprising a circular body, said body being adapted to control ballooning of the yarn as the yarn is fed through the device;

a ball type yarn tension control having a vertical axis and a mounting arm adapted to connect the yarn tension control device to the mounting bracket means, the ball type yarn tension control receiving the yarn from the conduit of the balloon control means at an angle, the vertical axis of the yarn tension control device being so oriented that a vertical plane drawn through the vertical axis will always be at right angles to a horizontal plane drawn through the balloon control means conduit; and

means to adjust the orientation of the vertical axis of the ball type yarn tension control toward and away from the horizontal axis of the balloon control means conduit to vary the angle between the horizontal axis of the balloon control means conduit and the vertical axis of the ball type yarn tension control device.

4,279,389

THREAD KEEPER

James K. Thomas, 21 Backkingdom Rd., Mexico, Me. 04257

Filed May 19, 1980, Ser. No. 151,347

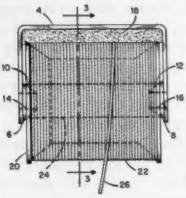
Int. Cl.³ B65H *59/04, 49/26*

U.S. Cl. 242—156.1 **6 Claims**

1. A thread keeper for use with a spool of thread in which said spool has an axial bore therethrough, said keeper comprising a U shaped unitary structure having a cross bar and two flexible arms sized to straddle said spool,

projections on said arms positioned to enter the ends of said axial bore to act as an axle about which said spool may rotate, said cross bar spaced from said spool,

a compressible element attached to the interior side of said cross bar and engaging in compressed condition the thread on said spool,



whereby said compressible element will apply to said threaded spool continuous limited restraint against rotation within said keeper.

4,279,390

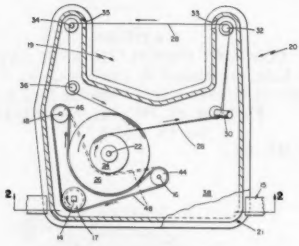
RIBBON CARTRIDGE

Edward S. Wu, Chelmsford, and Roger R. Soulard, Dracut, both of Mass., assignors to Wang Laboratories, Inc., Lowell, Mass.

Filed Oct. 18, 1979, Ser. No. 86,058

Int. Cl.³ G03B *1/04;* **G11B** *15/32*

U.S. Cl. 242—192 **4 Claims**



4. A reel-over-reel ribbon cartridge comprising

a housing having a base

a reel shaft mounted on said base with its axis perpendicular thereto

a ribbon supply reel rotatably mounted on said reel shaft with one side thereof adjacent said base for providing a supply of fresh ribbon wound thereon

a ribbon takeup reel rotatably mounted on said reel shaft on the opposite side of said supply reel for providing a takeup of used ribbon

ribbon guide means for guiding said ribbon from said supply reel to said takeup reel, said ribbon guide means including four shafts mounted on said base, a first shaft receiving said ribbon from said supply reel having its axis tilted away from said supply reel, said remaining shafts being mounted on said base with their axes perpendicular thereto, and

ribbon driving means positioned adjacent to said takeup reel including

a drive shaft rotatably mounted on said base with its axis perpendicular thereto and spaced from said reels and having a drive pulley mounted thereon in the plane of said takeup reel

a pair of idler shafts mounted on said base with their axes perpendicular thereto and on opposite sides of said drive pulley and said takeup reel, said idler shafts having rotatable idler pulleys mounted thereon in the plane of said takeup reel, and

a normally stretched tensioned elastic endless belt trained around said drive and idler pulleys and engaging an arcuate portion of the outer surfaces of the ribbon of said takeup reel for moving said ribbon from said supply reel to

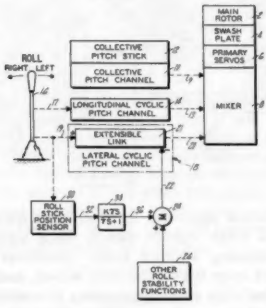
said takeup reel in response to rotation of said drive shaft, said belt engaging an increasing arcuate portion of the outer surface of said ribbon and moving said ribbon at a substantially constant rate as its diameter on said takeup reel increases during use of said cartridge.

4,279,391

DESENSITIZING HELICOPTER CONTROL RESPONSE TO INADVERTENT PILOT INPUTS

Don L. Adams, Fairfield; Richard D. Murphy, and William C. Fischer, both of Monroe, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jan. 24, 1979, Ser. No. 6,314
Int. Cl.³ B64C *11/44*
U.S. Cl. 244—17.13 **2 Claims**



1. A control system for a helicopter, comprising:

a full authority outer control loop including mechanical connection to a control stick by means of which a pilot induces commands to the control surfaces of the helicopter;

an inner, automatic stability loop for providing limited authority commands to the control surfaces of the helicopter independently of said mechanical connection and said control stick;

means responsive to the position of said control stick for providing a stick position signal; and

means including a washout filter responsive to said stick position signal for providing a short-term signal to said inner stability loop of magnitude and sense to provide a short-term command to the control surfaces of the helicopter which is substantially equal in magnitude and opposite in sense to an outer loop command represented by a change in control stick position indicated by said position signal so that pilot induced commands of a duration on the order of the time constant of said filter are substantially canceled by said inner loop.

4,279,392

ADJUSTABLE TIME-DELAYED APPARATUS FOR OPENING A PARACHUTE

Dennis M. Saxton, Santa Ana, Calif., assignor to FXC Corporation, Santa Ana, Calif.

Filed Aug. 22, 1979, Ser. No. 68,704
Int. Cl.³ B64D *17/58*
U.S. Cl. 244—150 **40 Claims**

1. A parachute opener comprising:

(a) a support;

(b) opening means carried by said support for movement from a cocked position to a release position for opening a parachute upon said movement to said release position;

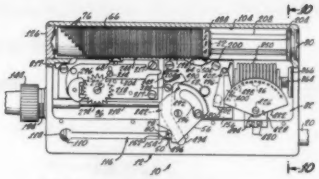
(c) latch means carried by said support for releasably locking said opening means in said cocked position and for unlocking said opening means in response to a parachute opening signal;

(d) means for driving said opening means to said release position; and

(e) adjustable time delay means carried by said support for interposing a time delay of predetermined magnitude between the start of said unlocking and the attainment of said release position by said opening means, said adjustable time delay means comprising:

an adjustable delaying member carried by said support for translational movement along a longitudinal axis of said delaying member,

said delaying member having a variable engageable portion thereon defined by a longitudinally extending series of engagement members, said variable engageable portion having an adjustable effective engagement length;



retarding means carried by said support for engaging said engagement members through said effective engagement length during a portion of said translational movement of said delaying member to retard the rate of said translational movement;

shifting means for shifting said delaying member relative to said retarding means to selectively vary said effective engagement length; and

linking means for coupling said opening means and said delaying members for conjoint movement,

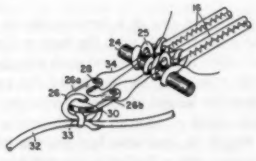
whereby said retarding means restrains motion of said delaying member, linking means and opening means during its engagement with said engagement members and releases its restraint thereof when disengaged from said engagement members.

4,279,393

PARACHUTE CANOPY SUSPENSION LINE RELEASE DEVICE AND METHOD

Ray E. Spinks, 9320 Earl St., #41, La Mesa, Calif. 92041

Filed Jul. 27, 1979, Ser. No. 61,224
Int. Cl.³ B64D *17/34*
U.S. Cl. 244—152 **3 Claims**



1. A glidable personnel-type parachute comprising:

a canopy having a peripheral skirt;

a plurality of suspension lines having upper ends connected to spaced points around said peripheral skirt and having looped lower ends;

said suspension lines being divided into a plurality of groups, said suspension lines in each group being connected at their lower looped ends to a respective parachute riser strap link;

preselected groups of said suspension lines being connected to their respective riser strap links by a connection made by making said lower looped ends of two adjacent suspension lines into releasable bights around said parachute riser strap link; and including

a rigid U-shaped tab having the legs of said U inserted into said releasable bights with each leg of said U-shaped tab snubbing one of said releasable heights of said adjacent suspension lines;

means for securing said U-shaped tab; and

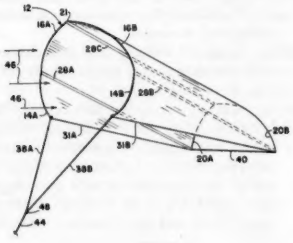
means for selectively releasing said U-shaped tab from said releasable bights to free said preselected groups of said suspension lines for permitting gliding of said parachute.

4,279,394

SWALLOWTAIL KITE

John W. Loy, P.O. Box 1281, Bartlesville, Okla. 74003

Filed May 29, 1979, Ser. No. 43,108
Int. Cl.³ B64C *31/06*
U.S. Cl. 244—153 R **7 Claims**



1. A kite of the sled type, comprising:

(a) a central canopy of light sheet material; generally in a rectangular shape, with two long parallel sides with shorter leading and trailing edges;

(b) the leading edge cut on a broken line forming a shallow first isosceles triangle, with its base at the front ends of the two sides, and the center peak ahead of the central canopy;

(c) the trailing edge cut in a broken line in the shape of second isosceles traingle with the base at the trailing ends of the two sides; and the central peak ahead of the trailing ends of the two sides; the height of the second triangle greater than the height of the first triangle;

(d) a left side panel of triangular shape with its long edge equal in length to, and attached to, the left side of the central canopy; and a similar triangular side panel with its long edge attached to the right side of the central canopy; said side panels made of light sheet material;

(e) at least three slender battens, one attached to each side of the central canopy and a third along the center line of the central canopy;

(f) a cord bridle, the two ends of the cord attached one to each of the tips of said side panels; and

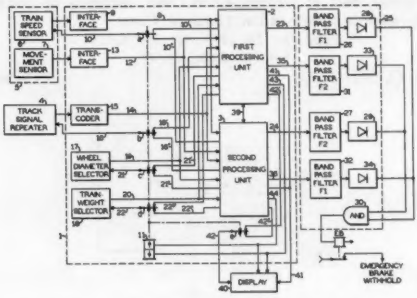
(g) a flexible halter, shorter than the width of said central canopy, tied between the trailing ends of said two outboard battens.

4,279,395

SPEED CONTROL APPARATUS FOR RAILROAD TRAINS

Francesco Boggio; Andrea Bertone, and Enzo Tumolo, all of Turin, Italy, assignors to WABCO Westinghouse Compagnia Italiana Segnali S.p.A., Turin, Italy

Filed Nov. 7, 1979, Ser. No. 92,111
Claims priority, application Italy, Dec. 21, 1978, 69919 A/78
Int. Cl.³ B61L *3/00*
U.S. Cl. 246—182 R **8 Claims**



1. Speed control apparatus for a railroad train, which is provided with brake control means, track signal repeater means for indicating advance traffic conditions along the stretch of track over which the train moves, and means for measuring actual train speed, comprising in combination,

(a) a first and a second processing unit, each coupled for receiving advance traffic condition and actual train speed signals and responsive thereto for individually calculating a maximum train speed which permits stopping said train by train braking controlled by said brake control means within the unoccupied track distance indicated by the received advance traffic condition signal,

(b) each processing unit further responsive for comparing the calculated speed signal with the received actual speed signal and for producing an alternating current output signal, having a preselected frequency different from that of the other processing unit, only when said actual train speed is less than the corresponding calculated maximum speed, each unit otherwise producing a signal having a direct current characteristic,

(c) a first and a second band pass filter and rectifier circuit path coupled to said first and second processing units, respectively, each circuit path tuned for producing an output signal only when the associated processing unit output is of the proper preselected distinctive frequency, and

(d) a two-input AND logic gate with one input coupled to receive the output signal from one filter and rectifier circuit path, the other input coupled to receive the output from the other filter and rectifier circuit path, and an output coupled to said brake control means for withholding or actuating train braking as an AND gate output signal is produced or is absent, respectively.

4,279,396

SHOWER CURTAIN CLIP

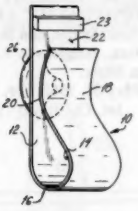
Edward M. Bendock, 35 S. Franklin Ave., Lynbrook, N.Y. 11563

Filed Feb. 15, 1980, Ser. No. 121,703
Int. Cl.³ F16B *47/00*
U.S. Cl. 248—206 R **2 Claims**

1. A shower curtain holder for detachably securing an edge portion of a shower curtain to a surface, comprising:

a curtain holder including means for detachably securing said curtain holder to an edge portion of a shower curtain,

said means comprising a resilient, plastic generally U-shaped clip having first and second arms which cooperate to frictionally engage an edge portion of a shower curtain inserted therebetween, said first arm comprises an elongated, flat, rectilinear strip having an inner side surface and an outer side surface and said second arm comprises an elongated, flat generally S-shaped strip having a lower end portion which merges with said first arm and an upper



end portion which is disposed closely adjacent to at least a portion of said inner side surface of said first arm for cooperation therewith so as to define a generally V-shaped entryway and so as to frictionally engage an edge portion of a shower curtain inserted therebetween; and

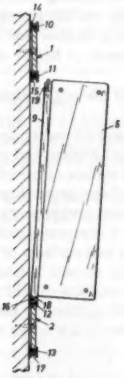
a suction cup secured to said outer side surface of said first arm of said curtain holder for detachably securing said curtain holder and, in turn, the edge portion of a shower curtain secured thereto, to a surface.

4,279,397

ATTACHMENT FOR WALL CABINETS, MIRRORS, SHELVES AND SIMILAR ARTICLES

Frank Larsson, Halmstad, Sweden, assignor to Hafa Fabriks AB, Halmstad, Sweden

Filed Aug. 23, 1979, Ser. No. 68,975
Claims priority, application Sweden, Aug. 28, 1978, 7809081
Int. Cl.³ A47B 96/06, 55/00
U.S. Cl. 248—221.3 **6 Claims**



1. An improved attachment device to carry wall cabinets, mirrors, shelves and similar elements, the improvement comprising

at least two wall strips arranged to be attached horizontally to a wall in parallel and opposite relationship, attachment means formed on each of said strips and cooperating attachment means formed on opposite upper and lower ends of element intended to be attached to the wall, said means on said strips each being arranged to cooperate with respective of said attachment means on said element,

the attachment means on one of said strips and one end of said element comprising cooperating tongue and groove parts for connecting each one strip and said element together

the attachment means of the other of said wall strips comprising a groove formed in the other wall strip,

the attachment means of the other end of said element including a releasable locking means operable in the locked position to cooperate with the groove of said other wall strip

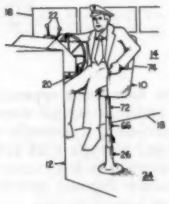
said element arranged to be locked in the desired position along said wall strips by movement of said releasable locking means into its locked position in its associated groove in said other wall strip.

4,279,398

VERSATILE HELMSMAN CHAIR FOR A YACHT

Lester W. Pregnall, 4026 Marine View Dr., Tacoma, Wash. 98442

Filed May 29, 1979, Ser. No. 43,549
Int. Cl.³ F16M 11/00
U.S. Cl. 248—405 **4 Claims**



1. A versatile helmschair for a yacht, powered upwardly from a rearwardly facing lounge seating height in a lounge of a yacht to an elevated forward viewing height in a pilot house portion of this lounge, and the helmsman, captain, or skipper remains seated in this helmschair and operates his controls of this helmschair, which are located in the arm of this helmschair to raise and to lower this helmschair, while he remains seated, and at any time he may change his facing direction upon swiveling, at any elevation, in either direction of rotation, from the lounge and stern facing direction to the bow facing direction, comprising:

(a) a comfortable upholstered lounge chair serving also as a helmschair;

(b) a swivelable chair attachment assembly secured to the bottom of the lounge chair;

(c) a lounge chair raising and lowering assembly secured to the swivelable chair attachment assembly, comprising in turn:

(1) an extendable hollow cylindrical portion secured to the swivelable seat attachment assembly and having an axial guide means permitting up and down motion, but no rotational motion;

(2) a stationary hollow cylindrical portion slidably fitted to the exterior of the extendable hollow cylindrical portion and having an axial guide means permitting up and down motion, but no rotary motion;

(3) a screw jack mechanism secured between and within the extendable portion and stationary portion to move them relative to one another, and thereby to raise and to lower the upholstered lounge chair serving also as a helmschair; and

(4) an electric motor to power the screw jack mechanism, using the yacht electrical power source and operated as the helmsman, captain, or skipper, while seated, utilizes the controls located in the arm of the lounge chair serving also as a helmschair; and

(d) a deck mounting assembly secured to the lounge chair

raising and lowering assembly, and adapted for securement to the deck of a yacht.

4,279,399

CONCRETE BEAM MOLDING APPARATUS

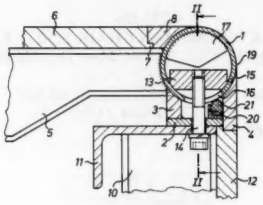
Erwin Schmucker, Schelklingen, and Karl Rampf, Erbach, both of Fed. Rep. of Germany, assignors to Rampf KG Formen GmbH & Co., Allmendingen, Fed. Rep. of Germany

Filed Jan. 22, 1980, Ser. No. 114,439

Claims priority, application Fed. Rep. of Germany, Feb. 1, 1979, 2903755

Int. Cl.³ E01C *19/50*

U.S. Cl. 249—2 **5 Claims**



1. A cast concrete form work apparatus for constructing bridge beams with an upper surface disposed for use as an inclined roadway comprising a generally vertically disposed form work partition and having a work surface, a hollow tube rotatably adjoined tangentially to an upper edge of said work surface of the vertically disposed partition, a second form work partition having a work surface securely affixed to the tube on a side thereof distal to the upper edge of the vertically disposed partition and extending in selective various angles to the horizontal for forming a pivotal assembly to each other, a groove member affixed onto a back side of the work surface and adjacent to the upper edge of the vertically disposed partition and having upper surfaces of the groove member being contoured for mating with an extension surface of the tube, the tube being hollow for receiving a clamping bar, a circumferentially disposed slot in the tube surface adjacent the groove member, and securing means passing radially through the circumferential slot between the vertically disposed form work partition and the clamping bar for locking the tube into a fixed position therewith and forming a rounded fillet for a finished concrete structure by means of the pivotal assembly.

4,279,400

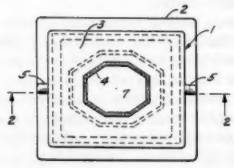
HOT TOP FOR INGOT MOLD

Lawrence A. Greenberg, Allentown, Pa., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Jun. 22, 1979, Ser. No. 51,256

Int. Cl.³ B22D *7/10*

U.S. Cl. 249—106 **3 Claims**



1. A hot top in combination with a rectangular ingot mold, said mold capable of producing a rectangular ingot having a thickness of at least 28 inches and a width greater than said thickness but no greater than 36 inches, said hot top having an octagonal refractory lined cavity, the lengths of the four corner sides of said cavity at the bottom of said hot top and measured in a transverse plane being substantially equal to each other, said corner sides being greater in length than any of the other four sides of said hot top measured in said transverse plane, but not greater than 1.2 times the length of the longest of said other four sides.

4,279,401

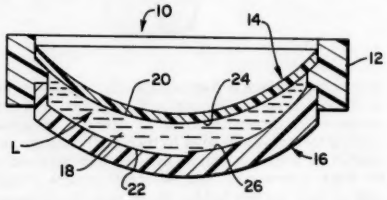
APPARATUS AND METHOD FOR MAKING CAST OPHTHALMIC LENSES

Peter R. Ramirez, Southbridge, and Bradford Canterbury, Sturbridge, both of Mass., assignors to American Optical Corporation, Southbridge, Mass.

Filed May 30, 1980, Ser. No. 154,670

Int. Cl.³ B29D *11/00*

U.S. Cl. 249—139 **14 Claims**



1. A molding die for making plastic casting pieces having ledged surfaces of particular curvature and relative juxtaposition according to multifocal lens focal field surfaces desired to be produced on ophthalmic lenses cast in said plastic pieces, said molding die comprising:

a base;

a pair of tightly juxtapositioned die pieces having adjoining curved molding surfaces together forming a molding face of said die, one of said molding surfaces being of shorter radius of curvature than the other, said difference of surface curvatures producing a ledge extending at least partially across said molding face of said die;

means for securing said die pieces to said base; and

means for shimming at least one of said die pieces on said base for adjustment of height of said ledging across said molding face.

13. The method of making a ledged lens casting piece comprising the steps of:

forming first and second master die components each having a finished curved surface and respectively adjoining finished sides, said surface of one of said components being of greater radius of curvature than the other;

juxtapositioning said components by joining said surfaces thereof to form a composite molding face, said difference in curvatures of said surfaces of said components causing a portion of one of said finished sides to form a ledge across at least a portion of said molding surface; and

molding a lens casting piece of plastic material against said molding face into which lenses may be subsequently cast.

4,279,402

EXPLOSION BARRING SHUTOFF DEVICE

Joseph Wey, Lucerne; Hans Sidler, and Hans Stalder, both of Eschenbach, all of Switzerland, assignors to Sistag, Maschinenfabrik Sidler Stalder AG, Switzerland

Filed Mar. 24, 1980, Ser. No. 133,391

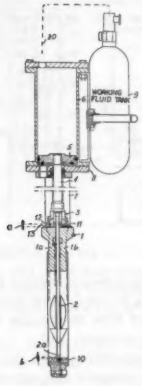
Claims priority, application Switzerland, Apr. 5, 1979, 3173/79

Int. Cl.³ F16K *31/122, 51/00*

U.S. Cl. 251—63 **7 Claims**

1. In a shutoff device comprising a housing having a closable flow passage, a valve seat, a closing member movable in the

housing from an opened position permitting flow through the passage to a closed position engaged on the valve seat and blocking the flow, and means for rapidly moving the closing member into a closed position having a movement connected to the closing member, the improvement comprising stop means defined between the movement member and the housing including a stop face and stop bolster made of a non-elastic deformable material disposed to engage and stop the movement member immediately before the closing member engages on the seat, said bolster being deformable to permit further closing movement after initial engagement with said stop face



to permit further completely closed movement and positioning of the closing member, the deformation of said bolster occurring to absorb the impact of the closing movement to prevent damage of the closing member and the valve seat.

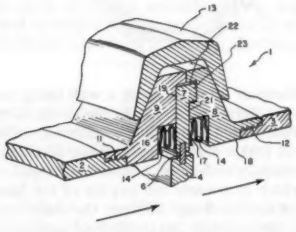
3. In a shutoff device according to claim 1 wherein said means for moving said closing member comprises a fluid operated piston connected to said movement member and including a stop face defined thereon, a bolster member mounted on said housing in the path of movement of said stop face being of a deformable material when engaged by said stop face will be deformed to permit a further closing movement of said closing member.

4,279,403

NON-REVERSIBLE VALVE ASSEMBLY

Michael J. Hobson, Fullerton, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 21, 1979, Ser. No. 13,100
Int. Cl.³ F16K *15/03*
U.S. Cl. 251—148 **4 Claims**



1. A non-reversible valve assembly for supporting a flow-control valve member in its correct operative disposition in a conduit formed between a pair of pipes comprising:

a support member secured to said flow control member for carrying it in said operative disposition, said support member being formed with side wall portions extending radially outwardly of said conduit,

a flange formed on and projecting laterally of one of said side wall portions,

a pair of pipe-supported clamping members having radially-extending interior side wall portions flushly engaging opposite surfaces of said support member side walls with the interior wall portion of one of the clamping members being formed with an indented groove for closely receiving the lateral flange of said support member only when said flow control member is in the correct operative orientation, thereby rendering the valve assembly to be non-reversible, and

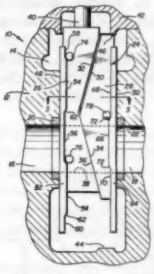
means for exerting a firm clamping pressure on said clamping members.

4,279,404

GUIDE ARRANGEMENT FOR EXPANDING GATE VALVES

Alan Levin, Houston, Tex., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed Oct. 17, 1979, Ser. No. 85,837
Int. Cl.³ F16K *25/00*
U.S. Cl. 251—167 **7 Claims**



1. An expanding gate valve comprising:

a valve body presenting a valve chamber therein and a fluid flow passage communicating with said valve chamber;

a pair of spaced apart valve seats mounted in said valve body about the flow passage adjacent the valve chamber;

an expanding gate assembly mounted in said valve chamber for movement between open and closed positions relative to the flow passage, said gate assembly including a gate member and a segment member having cooperating wedge surfaces which interact with one another in wedging fashion to expand the gate assembly to an expanded condition wherein the gate and segment members are pressed against the valve seats in both the open and closed positions of the gate assembly, said wedge surfaces permitting said gate assembly to contract inwardly of the valve seats to a collapsed condition for movement between the open and closed positions;

a pair of spaced apart rails mounted in the valve body on opposite sides of the gate assembly, each rail having a guide surface thereon extending substantially parallel to the direction of movement of the gate assembly between the open and closed positions, each of said guide surfaces presenting a plurality of spaced apart gaps therein;

a pair of pin elements projecting from one of said gate and segment members at locations to travel along one of said guide surfaces during movement of the gate assembly between the open and closed positions, said pin elements registering with the gaps in said one guide surface in both the open and closed positions of the gate assembly;

a third pin element projecting from the other of said gate and

segment members at a location to travel along the other guide surface during movement of the gate assembly between the open and closed positions, said third pin element registering with the gaps in said other guide surface in both the open and closed positions of the gate assembly;

said guide surfaces engaging said pins in a manner to prevent expansion of the gate assembly from the collapsed condition during movement of the gate assembly between the open and closed positions; and

said pins entering said gaps to permit expansion of the gate assembly to the expanded condition in both the open and closed positions.

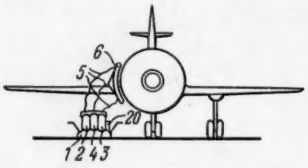
4,279,405
DEVICE FOR MAKING EMERGENCY EXITS IN A CRUSHED TRANSPORT MEANS

Valery M. Buryakov, ulitsa Onezhskaya, 15b, kv. 27; Nikolai N. Kolotilov, ulitsa Zorge, 36, kv. 108; Roman D. Tokhunts, Izmailovsky bulvar, 67, korpus 1, kv. 5; Vladimir S. Yakovlev, ulitsa Marshala Novikova, 6, korpus 2, kv. 56, all of Moscow; Vladislav A. Akulov, 26, kvartal 15, 15, kv. 68, Kuibyshev; Viktor G. Zabotin, ulitsa 22 Siezda, 179, kv. 27, Kuibyshev; Viktor Y. Levin, Volzhsky prospect, 33, kv. 58, Kuibyshev; Viktor P. Lukachev, Volzhsky prospect, 37, kv. 10, Kuibyshev; Alexandr N. Pervyshin, 26, kvartal 15, 6, kv. 82, Kuibyshev; Konstantin A. Zaitsev, prospekt Lenina, 1, kv. 174, Kuibyshev; Vladimir D. Karakov, ulitsa Krasnodonskaya, 13, kv. 28, Kuibyshev, and Mubaraksha D. Khasanov, Volzhsky prospect, 45, kv. 20, Kuibyshev, all of U.S.S.R.

Filed Nov. 26, 1979, Ser. No. 97,429

Int. Cl.[3] B23K *7/04*

U.S. Cl. 266—55 **6 Claims**



1. A device for making emergency exits in a crushed transport means, comprising, a gas cutter in the form of a combustion chamber having an outlet nozzle adapted and directed toward the wall of said transport to cut an aperture in the wall having the desired peripheral shape of an escape hatch, means for delivering into and igniting a combustible mixture in said combustion chamber and an emergency switch operatively connected with said means for delivering and igniting a combustible mixture to activate said means, said gas cutter being positioned with respect to the wall of a transport means so that a gas jet issued from said combustion chamber when said mixture is ignited through said outlet nozzle simultaneously cuts an escape hatch over the entire periphery thereof.

4,279,406
PLANT FOR GENERATING AN ATMOSPHERE FOR THE HEAT TREATMENT OF METALS

Yves Bourhis, Villejuif; Alain Wermelinger, Fresnes, and Michel Kostelitz, Versailles, all of France, assignors to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des procedes Georges Claude, Paris, France

Filed Feb. 20, 1980, Ser. No. 122,854

Claims priority, application France, Mar. 5, 1979, 79 05599

Int. Cl.[3] C21D *11/00*

U.S. Cl. 266—81 **12 Claims**

1. In a plant for generating an atmosphere in a heat treating furnace, in combination:

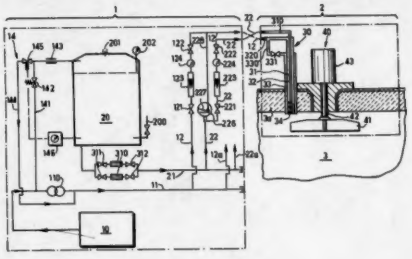
a source of nitrogen under pressure;

a nitrogen circuit connected to the source of nitrogen;

a tank containing alcohol;

an alcohol circuit connected to the tank;

distribution means communicating with the nitrogen and alcohol circuits and with said furnace for simultaneously feeding nitrogen and alcohol thereto, the alcohol being fed to the furnace decomposing at the furnace temperature by cracking of its molecules to yield carbon monoxide and hydrogen;



pressurizing means interconnecting the nitrogen circuit and the alcohol tank for supplying nitrogen thereto at a predetermined rate of flow to thereby maintain the alcohol in the tank under pressure; and

control means cooperating with the pressurizing means for controlling the pressure and rate of flow of the pressurizing nitrogen being supplied to said tank.

4,279,407
METALLURGICAL FURNACE IN PARTICULAR AN ELECTRIC ARC FURNACE

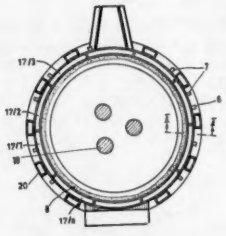
Emil Elsner, Baden-Baden, Fed. Rep. of Germany, assignor to Korf-Stahl AG, Fed. Rep. of Germany

Filed Jun. 3, 1980, Ser. No. 155,925

Claims priority, application Fed. Rep. of Germany, Jun. 20, 1979, 2924860

Int. Cl.[3] C21B *7/10*; H05B *7/18*

U.S. Cl. 266—193 **10 Claims**

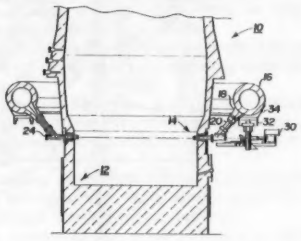


1. A metallurgical furnace having a wall lining comprising rows, which are disposed one above the other, of refractory bricks in a lower region thereof and at least one water cooling box in an upper region of the wall, the water cooling box being displaced outwardly with respect to the inside wall surface of the bricks, which is towards the interior of the furnace, and also having an annular flange between the water cooling box and the bricks for receiving and conducting outwardly leakage water from the water cooling box, characterized in that, at least in respect of one row of the bricks which adjoin the annular flange, the outer edge is displaced outwardly with respect to that of the bricks therebelow, and the rows adjoining the annular flange are pressed by the flange on to the rows therebelow.

4,279,408
APPARATUS FOR CHANGING TUYERES ON A BLAST FURNACE

James L. Egan, Sault Ste. Marie, Canada, assignor to The Algoma Steel Corporation, Limited, Ontario, Canada

Filed Feb. 28, 1979, Ser. No. 16,303
Claims priority, application Canada, Dec. 7, 1978, 317548
Int. Cl.³ F27B 1/10
U.S. Cl. 266—271 9 Claims



1. Apparatus for changing tuyere and tuyere stock assemblies of a blast furnace, said apparatus comprising:

(a) support rail means extending adjacent to the furnace and fixed a selected distance above the level of the tuyeres of the furnace;

(b) a primary carriage arranged for travel along said rail means, and first motor means for effecting such travel;

(c) a guide frame connected to said primary carriage and depending downwardly therefrom, said guide frame being connected for rotation about a vertical axis relative to such primary carriage; and second motor means for effecting such relative rotation about said vertical axis;

(d) a carriage support frame associated with said guide frame and constrained for travel upwardly and downwardly along the latter along a vertical substantially linear path, and third motor means connected between said carriage support frame and the primary carriage to effect said upward and downward movement of the carriage support frame, said carriage support frame having an elongated generally horizontal section defining a path of travel for a support carriage;

(e) a support carriage disposed on the carriage support frame for travel along said generally horizontal section thereof at a level determined by the vertical position of said carriage support frame relative to said guide frame, and fourth motor means for effecting movement of the support carriage along said generally horizontal section, the support carriage having holding means thereon for engaging and holding a tuyere stock or related assembly,

(f) whereby, by selective actuation of said first, second, third and fourth motor means said support carriage may be brought into close juxtaposition and alignment with a tuyere stock or related assembly and the holding means engaged therewith and the tuyere stock or related assembly either retracted from or inserted into the blast furnace.

4,279,409
PROCESS OF MAKING SIGNATURES FROM PREPRINTED WEBS FOR THE MANUFACTURE OF MAGAZINES OR THE LIKE

Bernard E. Pemberton, 8841 N. Westland Dr., Gaithesburg, Md. 20760

Filed Jun. 18, 1980, Ser. No. 160,730
Int. Cl.³ B41F 13/58; B65H 39/02
U.S. Cl. 270—5 13 Claims

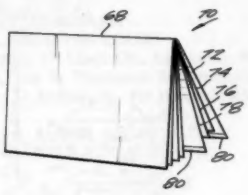
1. In the method of making magazines or the like of the type comprising at least one folded signature of at least sixteen pages, the steps comprising:

providing at least two preprinted webs each having at least four side-by-side equal width contiguous rows of separate areas of printed material on both web surfaces with the material in each row corresponding to separate pages of the magazine, the outer side edge of one of the outer rows being substantially contiguous with one side edge of the web, and the other side edge of the web being provided with a marginal edge portion extending laterally beyond the outer side edge of the other outer row a distance substantially equal to the amount necessary to form a bindery lap;

superposing said outer rows of each web so that the marginal edge portion of each web extends laterally beyond said one side edge of the web;

superposing the two row-superposed webs so that the marginal edge portions of the two webs are superposed and are outermost; and

folding the superposed webs along fold lines intermediate each outer row and the inner row adjacent thereto whereby the folded webs can be laterally severed into signatures each composed of a plurality of folded sheets nested one within the other with one of the sheets being



the outermost sheet and all remaining sheets being nested within the outermost sheet, each signature having at least eight leaves and at least sixteen pages and having a bindery lap along one edge of the innermost and the outermost of the sheets making up each signature and with no bindery laps on the corresponding edge of the intermediate sheets.

13. A signature comprising:

at least four sheets each folded along a fold line and nested one within the other to superpose said fold lines, said sheets having opposite side edges parallel to said fold line with the side edges of said sheets being in alignment along one side, one of said folded sheets being the outermost sheet with all the remaining sheets being nested within said outermost sheet, said outermost sheet and an innermost sheet being wider in the dimension measured normal to said fold lines than the other narrower sheets whereby the innermost and outermost of said sheets form bindery laps along their side edges opposite said aligned side edges.

4,279,410
FOLDER FOR A WEB-FED ROTARY PRINTING PRESS

Hans B. Bolza-Schünemann, Würzburg, Fed. Rep. of Germany, assignor to Koenig & Bauer Aktiengesellschaft, Wurzburg, Fed. Rep. of Germany

Filed Oct. 24, 1979, Ser. No. 87,847
Claims priority, application Fed. Rep. of Germany, Oct. 24, 1978, 2846191
Int. Cl.³ B41F 13/54; B65H 45/16
U.S. Cl. 270—6 7 Claims

1. An apparatus for producing cross folded sheet stacks, said apparatus comprising:

a plurality of formers having means to bring a plurality of paper ribbons together to form at least one group of paper ribbons;

at least one cross cutting cylinder group to cut said group of paper ribbons into a series of said sheet stacks;

a collecting cylinder equipped with controlled sheet stack

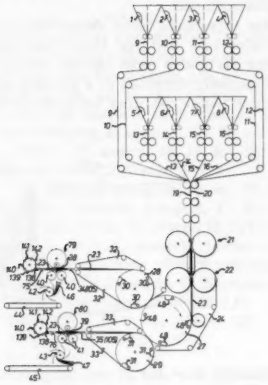
gripping means to receive said sheet stacks from said cross cutting cylinder group;

at least two take-over cylinders equipped with controlled sheet stack conveyor means to receive said sheet stacks from said collecting cylinder;

at least one sheet stack conveying means for receiving said sheet stacks from said take-over cylinders;

at least one cross folding means for cross folding said sheet stacks at right angles to their direction of motion at a folding table; and

at least one sheet stack braking device to stop said sheet stacks during said cross folding, said braking device being disposed after said cross folding means with respect to the direction of movement of the stacks, said sheet stack



braking device having a plurality of resiliently supported stop rods, a leading edge portion of each of said sheet stacks contacting one of said stop rods to move said rod from a rest position; a rotatable brake drum means mounting each said rod on said brake drum for rotation therewith to slow-down and stop the forward movement of the sheet stacks on said folding table; means for resiliently biasing each said rod to allow it to move a distance with a stack of sheets wherein Kinetic energy is transferred from the braked stack of sheets to the rod and biasing means; and means for intermittently rotating said brake drum to position succeeding ones of said stop rods for contact by said leading edge of succeeding sheet stacks whereby each said stack is braked by engagement with one of said resilient stop rods.

4,279,411

METHOD OF LAPPING WEBS

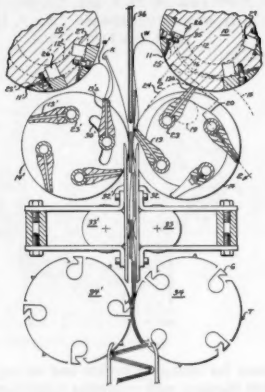
Ernst D. Nystrand, DePere, Wis., assignor to Paper Converting Machine Company, Green Bay, Wis.

Continuation-in-part of Ser. No. 49,287, Jun. 18, 1979, abandoned, which is a continuation of Ser. No. 871,236, Jan. 23, 1978, Pat. No. 4,163,548. This application Aug. 20, 1979, Ser. No. 67,881

Int. Cl.³ B41L *1/32*

U.S. Cl. 270—39 **3 Claims**

1. A method of lapping sheets comprising advancing an elongated web from each of a pair of parent rolls, tranversely weakening each web along equally longitudinally spaced apart lines to provide discrete identical sections having leading and trailing edges and to form a series of moving sections from each web wherein each series travels on opposite sides of a lineal path and each section of a series lies between a preceding section and a following section, folding a portion of each section about a transverse line adjacent each section's leading edge wherein said folded portion overlies a remaining portion of the section, conveying the respective series of thus folded sections on opposite sides of said lineal path while orienting said remaining portion of a preceding section to lie between the said lineal path and the associated transverse fold line of a following section, staggering one series relative to the other so that upon combining the two series the leading and trailing



edge of one series will be offset relative to the leading and trailing edges of the other series, orienting the folded portions of one series relative to the folded portion of the other series so that upon combining only one of the fold lines and trailing edges are exposed, and combining the two series.

4,279,412

APPARATUS FOR ENGAGING AND MOVING INDIVIDUAL FLAT STRUCTURES, ESPECIALLY PAPER SHEETS OR PRINTED PRODUCTS

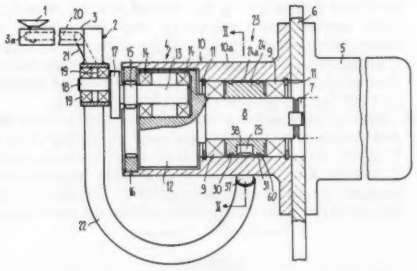
Werner Glatz, Hinwil, Switzerland, assignor to Ferag AG, Hinwil, Switzerland

Filed Feb. 2, 1979, Ser. No. 9,138

Claims priority, application Switzerland, Feb. 15, 1978, 1652/78

Int. Cl.³ B65H *3/08*

U.S. Cl. 271—108 **9 Claims**



1. An apparatus for destacking a stack of flexible flat structures, especially paper sheets or printed products, comprising:

a suction head movable into engagement with a flat structure for seizing the same and entraining such flat structure until release thereof;

drive means for moving said suction head into engagement with the flat structure and for moving such suction head through a predetermined path of travel;

said drive means includes a drive shaft coupled with a driving arrangement;

a source of negative pressure;

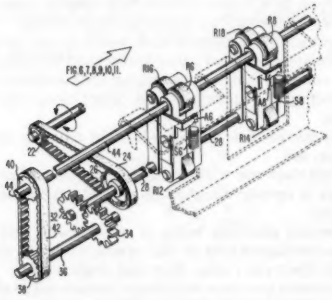
valve means operatively connected with said source of negative pressure and said suction head;
said valve means being controlled by said drive means;
said valve means operatively connecting the suction head for a certain time with the negative pressure source in order to engage the flat structure by means of the suction head;
said valve means comprising a substantially cylindrical valve body;
said valve body being secured to said drive shaft;
a stationary housing within which there is rotatably mounted said valve body;
said valve body having a recess extending in the direction of and over part of its circumference and being open towards said housing;
said housing having a first housing connection operatively connected with said negative pressure source and a second housing connection operatively connected with said suction head;
said second housing connection, viewed in the direction of rotation of the valve body, being spaced apart from and lying behind said first housing connection;
said housing further having a third housing connection serving for venting;
said third housing connection, viewed in the direction of rotation of the valve body, being arranged in spaced relationship behind said second housing connection;
said recess, during rotation of said valve body, at first connecting the first housing connection with the second housing connection, thereafter interrupting the connection between the first housing connection and the second housing connection and connecting the second housing connection with the third housing connection.

4,279,413

DRIVE MECHANISMS FOR PASSBOOKS

Henry A. Siwik, Plymouth, and Lawrence P. Kobylarz, Howell, both of Mich., assignors to Burroughs Corporation, Detroit, Mich.

Filed Oct. 17, 1979, Ser. No. 85,521
Int. Cl.³ B65H *5/06*
U.S. Cl. 271—274 **3 Claims**



3. A drive mechanism for use in transporting bank passbooks and similar objects into position for printing and the like, where the objects are nominally flat but may have uneven thicknesses due to ridges and to the presence of unequal amounts of paper, comprising:

roller means, disposed on opposite sides of a path in a manner enabling a first part of the roller means to engage the leading front and back surfaces of a selected object and to urge the selected object forward to enable a second part of the roller means to engage said front and back surfaces of the selected object;

biasing means cooperating with said roller means to enable each part of said roller means to securely engage opposite surfaces of an object where the surfaces may be separated by different thicknesses of material;

drive means for causing said roller means to rotate and, in cooperation with said biasing means, to transport the object along a selected path between the roller means;

each part of said roller means including drive rollers supported on a drive shaft and idle rollers supported on independent idler shafts by arms which are spring biased independently of each other by separate springs into positions to oppose the drive rollers and provide carriers to transport unequal thicknesses of paper;

a first one of said arms having one end supporting a first idle roller and a second end engaging the drive shaft of a first adjacent drive roller in a manner enabling said first arm and associated idle roller to rotate about the second end of the first arm; and

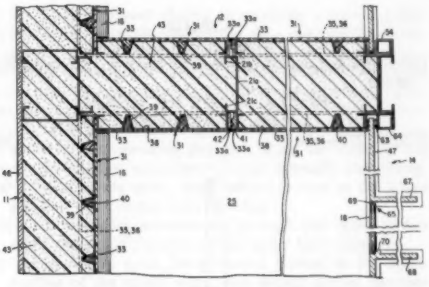
a second one of said arms having one end supporting a second idle roller and a second end engaging the drive shaft of a second adjacent drive roller to enable the second arm and associated idle roller to rotate about the second end of the second arm.

4,279,414

PLAYING COURT

Steven B. Kammerman, 11 Alscot Cir., Langhorne, Pa. 19047; Frank Kawasaki, 114 N. Woodstock St., Philadelphia, Pa. 19103, and Albert G. Molloy, Jr., 114 Deepdale Rd., Wayne, Pa. 19087

Filed Jul. 17, 1978, Ser. No. 925,405
Int. Cl.³ E04D *1/28;* **A63B** *71/02*
U.S. Cl. 272—3 **5 Claims**



1. A playing court comprising a sports facility having a generally rectangular configuration to accommodate therein at least two persons playing a game wherein a resilient ball is played from one or more of the inner facing surfaces of said court, said court comprising at least front, rear and side walls wherein the improvement resides in constructing at least some of said walls of a plurality of prefabricated panels, each panel including an inner facing polycarbonate sheet each polycarbonate sheet having a backing layer of high density foam, panel reinforcing means attached to said sheet extending throughout said layer of high density foam, a plurality of spaced vertical studs for supporting and mounting said panels and sheets in adjoining relationship and fastening means for securing said reinforcing means to said studs to permit hanging of said panels on said studs.

4,279,415

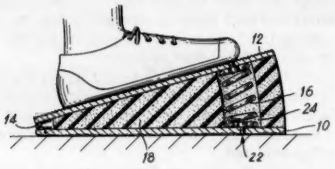
EXERCISING DEVICE

Sam Katz, 530-D Grant St., New York, N.Y. 10002

Filed Jun. 29, 1979, Ser. No. 53,707
Int. Cl.³ A63B *23/04*
U.S. Cl. 272—70 **5 Claims**

1. An exercising device comprising at least one base and treadle member positioned so as to form a V-shaped opening, hinge means pivotally connecting said base and treadle mem-

bers at the end remote from said opening, at least one coil spring perpendicularly connected to said treadle member and connected to said base member at a point near said opening so as to conform to the semi-circular contour of the collapsing action of said treadle, and a crushable resilient material substantially filling said opening, said material having an opening



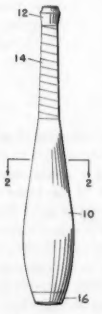
with a wall corresponding to the contour formed by said coil spring, said treadle being movable from a first position in which said coil spring is fully extended and said crushable resilient material is substantially uncompressed, and a second position in which both the coil spring and crushable resilient material are compressed and the treadle is pivoted on said hinge toward said base member.

4,279,416

JUGGLING CLUB

Oliver D. Finnigan, III, 23004-107th Place W., Edmonds, Wash. 98020

Filed Jul. 11, 1979, Ser. No. 56,717
Int. Cl.³ A63B *15/00*
U.S. Cl. 272—124 **2 Claims**



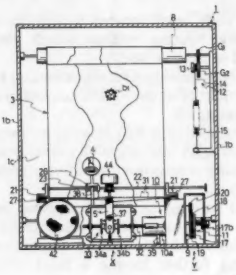
1. A juggling club comprising a onepiece molded plastic body in the configuration of a kingpin; and a hollow knob formed of resilient material mounted at one end of the body, in which said one end of the body has a bulged portion at the end thereof for receiving the knob with the end of the knob extending down over and covering said bulged portion, said body defining a handle portion adjacent to the bulged portion, and said knob having a tapered configuration extending toward the handle portion, and which includes a cupshaped tip member formed of resilient material mounted at the other end of the body and having an internal peripheral lip, and in which said other end of said body has a peripheral groove for receiving the peripheral lip of the tip member and constituting the sole support for said tip member.

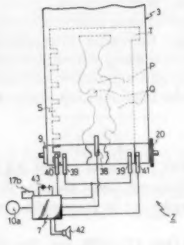
4,279,417

OBSTACLE GAME MACHINE

Gunpei Yokoi, Kyoto, Japan, assignor to Nintendo Co., Ltd., Kyoto, Japan

Filed Jul. 23, 1979, Ser. No. 60,035
Claims priority, application Japan, Sep. 8, 1978, 53-111168
Int. Cl.³ A63F *9/14*
U.S. Cl. 273—1 E **7 Claims**





1. An obstacle game machine including a movable sheet having a running area and an obstacle area, a simulated object to be driven by a player, wherein said obstacle game machine comprises; an obstruction detecting means having

an electrically conductive mask which moves in operative association with said movable sheet and includes an obstacle conductive area and a running non-conductive area for detecting the running of said object along said running area,

a first electrode in contact with said obstacle conductive mask, and

a second electrode which is movable across said conductive mask in operative association with the movement of said object,

said second electrode being in contact with said running non-conductive area of said conductive mask so long as said object stays away from said obstacle area,

an electronic generator including a speaker and an electronic tone generator circuit in an electronic control unit for emitting a sequence of "run" electronic sounds when said first and second electrodes of said obstruction detecting means are in an electrically non-connected state, and for emitting a sequence of "obstacle" electronic sounds when said first and second electrodes of said obstruction detecting means are in an electrically connected state.

5. An obstacle game machine including a movable sheet having a running area and an obstacle area and a simulated object to be driven by a player, wherein said obstacle game machine comprises;

an obstruction detecting means comprising:

an electrically conductive mask, having an end portion, and which moves in association wih said movable sheet and which includes an obstacle conductive area and a running

non-conductive area for detecting the running of said object along said running area,

a first electrode in contact with the obstacle conductive mask and

a second electrode which is movable across said conductive mask in operative association with the movement of said object,

said second electrode being in contact with the running non-conductive area of said conductive area of said conductive mask so long as said object stays away from the obstacle area,

a movable sheet driving means comprising:

a drive roll and a driven roll which are horizontally and rotatably mounted in a casing and around which both ends of said movable sheet are wound,

a power unit including an electric motor,

a one-way transmission mechanism engaging in said power unit which said drive roll only when said electric motor is running in the forward direction, and

a reverse motion actuating means which, as said movable sheet is accumulated by said drive roll, imparts to said driven roll reverse rotating energy to rotate said movable sheet in the reverse direction,

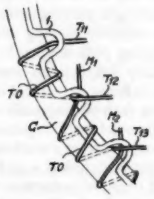
wherein during said forward rotation of said motor, said movable sheet is wound around said drive roll and advanced toward said drive roll and wherein during said reverse rotation of said motor, said reverse motion actuating means operates such that said movable sheet is rapidly moved toward said driven roll.

4,279,418

RACKETS FOR TENNIS AND OTHER GAMES

Francois R. Lacoste, Neuilly-sur-Seine, France, assignor to Patentex S.A., Fribourg, Switzerland

Filed Jun. 13, 1979, Ser. No. 48,051
Claims priority, application France, Jun. 15, 1978, 78 17893
Int. Cl.³ A63B *51/00*
U.S. Cl. 273—73 D **6 Claims**



1. A racket for tennis and similar games comprising:

a handle;

a generally oval frame attached to said handle,

an arcuate auxiliary element conforming to and in contact throughout its length with the inner periphery of said frame,

a plurality of strings extending across said frame and forming a striking face,

said auxiliary element being provided with means for engaging at least some of said strings and maintaining said strings in the median plane of said frame,

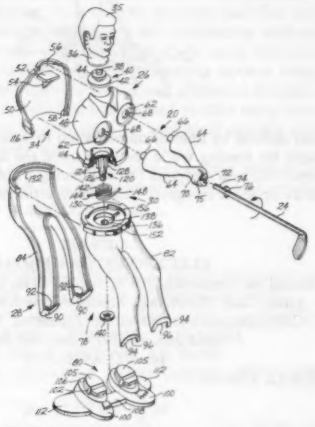
at least some of said strings being wound about both said frame and said element as the principal means of maintaining said element in contact with said frame.

4,279,419

TABLE TOP GOLFING FIGURE WITH SPRING DRIVING ROTATABLE UPPER TORSO

George A. Barnes, Seattle, and Leslie Perhacs, Jr., Port Ludlow, both of Wash., assignors to Victory Games, Inc., Issaquah, Wash.

Filed Jul. 21, 1980, Ser. No. 170,648
Int. Cl.³ A63F *7/06*
U.S. Cl. 273—87.4 **11 Claims**



1. In a golfing figure shaped to resemble a human golfer holding a golf club with outstretched arms and bent forwardly to address a golf ball, the figure having an upper body member forming the portion of the golfing figure from the waist up and a lower body member forming the portion of the golfing figure from the waist down, an improved joint assembly interconnecting the upper and lower body members for relative rotation about an axis extending generally along the length of the upper body member, said improved joint assembly comprising:

(a) a downwardly open, upper socket formed in the lower portion of the upper body member;

(b) a pin extending downwardly through said upper socket along the axis of rotation of the upper body member;

(c) an upwardly open, lower socket formed in the upper portion of the lower body, said socket having portions defining a pilot hole for rotatably receiving the lower end portion of said pin;

(d) spring means surrounding said pin and housed within said upper and lower sockets;

(e) attaching means for attaching said spring means to the upper and lower body members so that the upper and lower body members are nominally aligned with each other; and

(f) stop means for limiting the angle of relative rotation of the upper and lower body members between a first position wherein the upper body member is rotated rearwardly from angular alignment with the lower body member to thereby energize said spring means, and a second position wherein the upper body member is rotated forwardly from angular alignment with the lower body member to thereby release said spring means.

4,279,420

PORTABLE GOLF PRACTICE PLATFORM

Marvon Bay, 706 James Blvd., Apt. #5, and Norman L. Larson, 706 James Blvd., Apt. #2, both of Worthington, Minn. 56187

Filed Dec. 17, 1979, Ser. No. 104,077
Int. Cl.³ A63B *69/36*
U.S. Cl. 273—187 A **9 Claims**

1. A portable golf stroke practice platform including, a deck

of flat rectangular configuration having marginal areas covered with artificial turf of an upstanding filiment depth simulating natural fairway turf, there being a central stance area devoid of said artifical turf and surrounded by said marginal areas

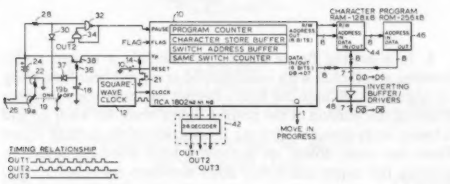
and defined by lines of demarcation to which the golfer positions his footing while standing upon the marginal area covered with said marginal turf and facing a golf ball to be driven at an opposite marginal area of said artificial turf.

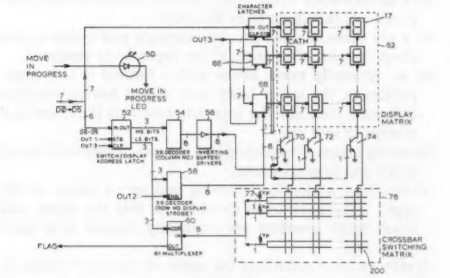
4,279,421

ELECTRONIC GAMEBOARD

Darrell M. Tepoorten, 909 S. Bonnie Brae, Suite 207, Los Angeles, Calif. 90006, and Steven A. Hechtman, Los Angeles, Calif., assignors to Darrell M. Tepoorten, Los Angeles, Calif.

Filed Jun. 19, 1979, Ser. No. 50,075
Int. Cl.³ A63F *3/02*
U.S. Cl. 273—237 **10 Claims**





1. An electronic chessboard comprising:

means for generating electronic representations of all of the playing pieces used in the game of chess;

a plurality of display means, arranged to represent the playing surface of a chessboard, for continuously displaying said electronic representations of all of said playing pieces at each possible piece location on the playing surface;

means for causing said display means to display said electronic representations of said playing pieces in a position to begin a game of chess;

a plurality of switch means, each associated with one of said display means, for initiating transfer of said electronic representations of said playing pieces between said display means;

means for removing and storing said electronic representation present at a first of said display means upon said activation of said switch means associated with said first display means;

means for transferring, upon activation of a second switch means associated with a second of said display means, said stored representation to said second display means;

means for regenerating, at each of said display means, the electronic representation previously present at said display means when said switch means associated with said display means is activated more than once in succession;

means for cyclically generating said electronic representations of all of said playing pieces at any one of said display means when said switch means associated with said display means is activated more than twice in succession; and

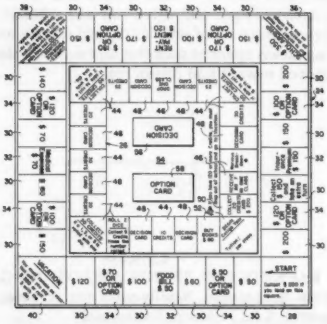
means for deactivating said display means and for storing the configuration of said playing surface when said chessboard is deactivated.

4,279,422

BOARD GAME INVOLVING MULTIPLE VARIABLES AND PERFORMANCE DETERMINATION

Mark Shaw, 1326 Colorado St., Manhattan, Kans. 66502

Filed Mar. 15, 1979, Ser. No. 20,657
Int. Cl.³ A63F *3/00*
U.S. Cl. 273—256 **3 Claims**



1. Board game apparatus simulating occurrences of attending college, comprising:

a plurality of playing pieces, each playing piece representing one player during use of said board game apparatus;

a game board having a playing surface and including means defining two separate playing paths on the playing surface, each playing path defined by a plurality of separate intervals serially linked in an unending continuous loop, said intervals defining movement increments of each playing piece along each playing path, one of the playing paths defining a financial path representing financial occurrences occurring when in a working situation, the other of the playing paths defining a college path representing academic and financial occurrences occurring during the simulated event of attending college, said board game further including indicia means designating each interval of each path as a particular type of interval, the majority of the intervals of the financial path being designated by an amount of financial reward or financial detriment to be attributed to a playing piece upon termination of movement on such interval, at least some of the intervals of the college path being designated by an amount of college credit or college detriment to be attributed to a playing piece upon termination of movement on such interval, at least a few of the other intervals of the college path being designated by an amount of financial reward or financial detriment to be attributed to a playing piece upon termination of movement on such interval, at least a few of the remaining intervals of the college path being designated only by a decision indication;

a plurality of decision cards associated with each decision interval of the college path, each decision card having indicia means thereon for indicating a decisional choice, each decisional choice allowing selection between one of either a financial reward or a financial detriment or one of either a college credit or a college detriment;

a pair of dice, each one of said pair of dice having indicia means for indicating numbers to dictate movement of the playing pieces over the intervals of the paths of said game board whereby financial rewards and detriments and college credits and detriments are attributed to each playing piece in accordance with the intervals upon which movement of the playing piece terminates;

a multiple grade guesser comprising a cover member, a wheel member rotationally attached to the cover member, indicia means formed on the wheel member and indicating a plurality of college credits and college detriments arranged in a predetermined pattern, the cover member defining a plurality of window openings therein arranged in a predetermined pattern to align with and expose a predetermined plurality of college credits and college detriments upon rotation of the wheel member to one of a predetermined plurality of positions, and window cover means associated with each window opening for normally closing each window opening and concealing the aligned college credit or college detriment behind each window, each window cover means being selectively movable for opening each window opening and exposing the college credit or college detriment aligned behind the selected window opening; and

at least one of one of said intervals of the college path or one of the decisional choices supplied by the decision cards provides for attributing a college credit or college detriment revealed behind the aligned window opening of the multiple grade guesser upon movement of the selected window cover means, the college credit or college detriment to be attributed to the playing piece terminating movement on such interval.

4,279,423

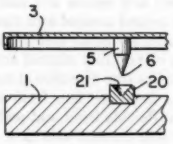
PHONOGRAPH DECOUPLING APPARATUS

Frank Rizzello, 85-50 259th St., Floral Park, N.Y. 11004

Filed Oct. 22, 1979, Ser. No. 86,997

Int. Cl.³ G11B *3/60*

U.S. Cl. 369—247 **20 Claims**



1. A record playing apparatus comprising:

a first motor driven, substantially rigid, turntable platter;

a second substantially rigid turntable platter mounted above said motor driven platter with no further platters mounted therebetween, said first and second platters having confronting surface portions, said second platter adapted to receive a record thereon;

a plurality of low compliance small contact area mounting devices, each of said mounting devices comprising a substantially rigid, substantially inelastic protrusion or projection in the form of an elongated pin fixed to and rigidly extending from one of said first and second platters toward the other of said platters and each having a free generally pointed end;

receiving means on said other of said platters for receiving and engaging said pointed free ends of said small contact area mounting devices said receiving means comprising a depression having a generally V-shaped cross-section such that movement of said other platter relative to said free ends of said small contact area mounting devices is prevented during operation of the record playing apparatus;

said small contact area mounting devices being spaced from each other and being unconnected with each other, and being distributed around peripheral portions of said confronting surface portions of said first and second platters for providing a plurality of isolated small contact, substantially rigid, support areas directly between said first and second platters and maintaining said confronting surfaces spaced from each other, the total of the cross sectional areas of said small contact area mounting devices being substantially less than the area of said platters in the plane of said platters, said first and second platters being connected with each other only via said small contact area mounting devices; and

a spindle in the central portion of said second platter for engaging a center of a phonograph record, said spindle not extending to said first platter.

4,279,424

SEALING ARRANGEMENT FOR A JOINT BETWEEN TWO STATOR PARTS OF A TURBOMACHINE

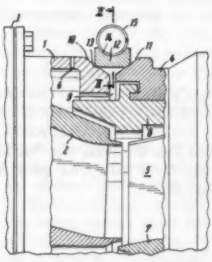
Ferdinand Zerlauth, Andelfingen, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Oct. 15, 1979, Ser. No. 84,892

Claims priority, application Switzerland, Oct. 26, 1978, 11068/78

Int. Cl.³ F16J *15/34*

U.S. Cl. 277—83 **8 Claims**



1. In combination,

a pair of stator parts of a turbomachine, said parts being disposed in spaced coaxial relation to each other to define a gap therebetween, each said part having a bevelled peripheral surface at an end facing the other of said parts to define a V-shaped notch;

a split ring disposed about said ends of said stator parts to seal said gap, said ring having a pair of bevelled sealing surfaces and being unrestrainedly put on the bevelled surfaces parts from outside, each said sealing surface slidably contacting said peripheral surface of a respective stator part in sealed relation; and

a tensioning means disposed on said ring to hold said ring on said ends of said stator parts while biasing said ring into a closed condition.

4,279,425

DUAL SEAL GASKET

Roger Beacom, 942 W. Douglas Ct., Venice, Fla. 33595

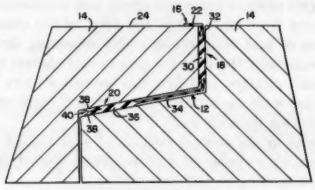
Filed Sep. 8, 1980, Ser. No. 185,310

Int. Cl.³ F16J *15/10*

U.S. Cl. 277—207 A **1 Claim**

1. A dual seal gasket specifically configured to seal the joint between two adjacent pipes comprising an annular resilient

member including a first retainer lement disposed to engage the outer surface of at least one of the adjacent pipes, a first sealing element including an upper and lower enlarged truncated compressible member interconnected by a reduced intermediate member, said upper and lower enlarged truncated compressible members each includes a pair of substantially V-shaped channels disposed on opposite sides thereof, and a second sealing element including a substantially cone-shaped compressible body, and a pair of compressible fringe members



extending outwardly from said substantially cone-shaped body to cooperatively form a channel therebetween, wherein the longitudinal axis of the said second sealing element is substantially parallel to the longitudinal axis of said first retainer element and substantially perpendicular to the longitudinal element of said first sealing element such that as the adjacent pipes are placed in operative relation relative to each other said first retainer element retains said dual seal gasket therebetween as said first and second sealing elements are compressed therebetween to seal the joint between the adjacent pipes.

4,279,426

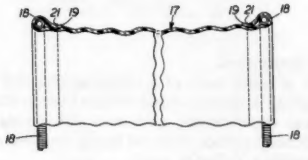
SEAL FOR SPACE BETWEEN WINDOW OPENINGS OF A VEHICLE CAB AND A CAMPER CARRIED THEREBY

Earl Flack, Jr., P.O. Box 143, Arab, Ala. 35016

Filed Feb. 28, 1980, Ser. No. 125,547

Int. Cl.³ F16J *15/02*; B60P *3/32*

U.S. Cl. 277—237 R **5 Claims**



1. A sealing device for sealing the space between and surrounding aligned, spaced apart window openings at the rear of a vehicle cab and at the front of a camper carried thereby comprising:

(a) an endless flexible member of sheet material of a length to surround both of said aligned window openings and of a width greater than the space therebetween so that it projects forwardly of the opening at the rear of the vehicle cab and rearwardly of the opening at the front of the camper, and

(b) an endless resilient member carried by and extending along each edge of said endless flexible member with each said resilient member being of a length greater than the peripheral distance around the window opening adjacent thereto and being adapted to snap through said window opening adjacent thereto and then retain a position outwardly thereof.

4,279,427

SKI EDGING DEVICE FOR A SKI SUPPORTED VEHICLE OR THE LIKE

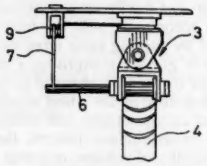
Soichi Kawazoe, 452-72, Kajigayacho, Totsuka-ku, Yokohama-shi, Kanagawa-ken, Japan

Filed Aug. 15, 1979, Ser. No. 66,773

Claims priority, application Japan, Apr. 9, 1979, 54/42849

Int. Cl.³ B62B *13/12*

U.S. Cl. 280—16 **7 Claims**



1. A ski edging device for a snowmobile or other ski supported vehicle of the type having a body supported by steerable skis and a movable steering means connected to the skis for turning the skis about each respective ski-steering axes to control the direction of travel of the vehicle, said device comprising:

an articulable joint connected between each ski and the body of the vehicle, said joint rotatable about a respective ski-steering axis with said ski in response to a steering movement from a steering means, said articulable joint having a first portion articulable relative to a second portion to permit rotation of said ski about a camber axis;

a first control arm means coupled to said first portion and rotatable with said first portion about said ski-steering axis;

a second control arm means coupled to said second portion and rotatable with said second portion about said camber axis, said second control arm means including a portion that extends laterally outward from one side of said ski and another portion that extends laterally outward from the other side of said ski;

first flexible band and pulley means connected between said first control arm means and said first-mentioned portion of said second control arm means extending laterally outward from one side of said ski; and

second flexible band and pulley means connected between said first control arm means and said second-mentioned portion of said second control arm means extending laterally outward from the other side of said ski;

whereby rotation of said first control arm means about said ski-steering axis in a first direction in response to a steering movement in a first direction from said steering means causes said first flexible band and pulley means to rotate said ski about said camber axis in a first direction, and rotation of said first control arm means about said ski-steering axis in a second direction in response to a steering movement in a second direction from said steering means causes said second flexible band and pulley means to rotate said ski about said camber axis in a second direction, opposite from said first direction.

4,279,428

VIBRATION ABSORBING DEVICE FOR MOTOR VEHICLE

Takayoshi Onodera, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Nov. 20, 1979, Ser. No. 95,937

Claims priority, application Japan, Aug. 14, 1979, 54/111240[U]

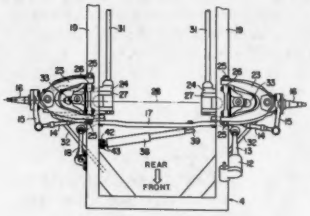
Int. Cl.³ B62D *7/16*

U.S. Cl. 280—95 R **5 Claims**

1. In a motor vehicle having a front body and a rear body disposed independently of each other on a frame structure and

a steering assembly including a relay rod disposed between opposed sides of said frame structure and positioned in front of the axle line, the relay rod being connected at the opposed ends thereof to opposed wheels by way of knuckles, said wheels being independently suspended from said frame structure, the improvement comprising:

vibration absorbing means having opposed ends interconnecting said relay rod with one side of said frame structure, one end of said vibration absorbing means proximate said one side being disposed in front of the vertical plane of said relay rod and above the horizontal plane of said relay rod, for absorbing vibration induced by said independently suspended wheels and said independent front and rear bodies in the longitudinal, lateral and vertical directions of the motor vehicle.

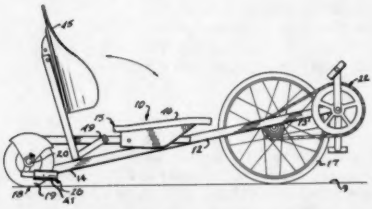


4,279,429

VEHICLE WITH ADJUSTABLE STEERING AXIS ANGLE CONTROL

Grant Hopkins, 29½ Lenore, and Mark Cantrell, 150 Wilbur, Box 60, both of Walla Walla, Wash. 99362

Filed Jan. 15, 1980, Ser. No. 112,338
Int. Cl.³ B62K *5/08, 21/00*
U.S. Cl. 280—267 **13 Claims**



10. A steering control mechanism for a vehicle having a frame and a steerable support means comprising:

first gimbal means adapted to mount the support for pivotal movement about a steering axis;

second gimbal means adapted to mount the first gimbal means to the frame for pivotal movement thereon about a steering control axis that is perpendicular to and intersects the steering axis; and

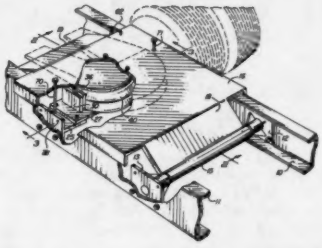
control means connected to the first gimbal means for selectively pivoting the steering control axis and adapted to selectively vary the angular position of the steering axis relative to the frame.

4,279,430

FIFTH-WHEEL SUSPENSION SYSTEM

Forrest L. Tagg, Circle Pines, and Francis E. Tourville, Forest Lake, both of Minn., assignors to Air-Glide Corporation, Lino Lakes, Minn.

Filed Jul. 19, 1979, Ser. No. 59,062
Int. Cl.³ B62D *53/08*
U.S. Cl. 280—439 **15 Claims**



11. A fifth wheel mounting system for supporting a fifth wheel on a truck tractor frame comprising at least first and second spaced apart longitudinally extending parallel frame members, said system including in combination:

a fifth wheel support plate mounted at one end for pivotal movement about a transverse axis extending across said first and second frame members;

a suspension means support member mounted between the first and second parallel frame members and located beneath the plane of the upper surface thereof;

resilient suspension means supported on said suspension means support member beneath the other end of said support plate for normally elevating said other end of said support plate a predetermined distance above said truck tractor frame; and

first and second pairs of first and second cooperating wear plates, respectively, for minimizing lateral shift and roll of said support plate, each of said wear plates comprising flat plates the planes of which are perpendicular to said support plate and the plane of said tractor frame and extend longitudinally of said tractor frame, the first wear plates of each of said pairs being spaced apart transversely from one another and attached to and depending from said support plate and located in sliding relationship with the second plates, respectively, of each of said pairs of wear plates mounted in fixed position with respect to said frame.

4,279,431

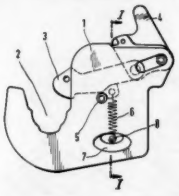
COUPLING HOOK

Wilhelm Schott, Cologne, Fed. Rep. of Germany, assignor to Jean Walterscheid GmbH, Lohmar, Fed. Rep. of Germany

Filed Jul. 13, 1979, Ser. No. 57,430
Claims priority, application Fed. Rep. of Germany, Jul. 22, 1978, 2832367
Int. Cl.³ B60D *1/04*
U.S. Cl. 280—508 **3 Claims**

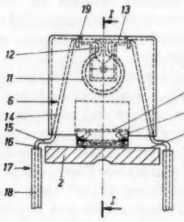
1. A coupling hook, particularly for use in the lower links of a three-point linkage for connecting an agricultural implement to a tractor, comprising upwardly extending side walls each having an upper end and a lower end and laterally defining a pocket therebetween, at least one of said side walls being shaped to form a hook jaw for receiving a connecting element of an agricultural implement, means located within the pocket for latching the connecting element and securing it in said locking jaw, said means including a latch for latching the connecting element in the locked position and a locking spring for holding said latch in the locked position, wherein the improvement comprises a bottom wall extending across the lower ends of said side walls and forming a closure for the

bottom end of the pocket, one of said side walls having an opening therethrough extending from the pocket to the exterior of the side wall and the opening being located above and adjacent said bottom wall, and said locking spring having an upper end connected to said latch and depending downwardly therefrom within the pocket and having a lower end connected



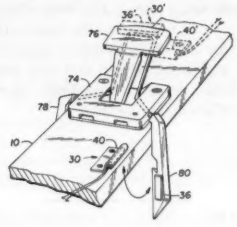
to said coupling hook within the pocket and the connection of the lower end of said locking spring being located opposite the opening in one of said side walls so that the assembly of the lower end of said locking spring to said coupling hook is simplified and the location of the opening facilitates the cleaning out of the pocket.

4,279,432
SKI BRAKE
Erwin Krob, and Tibor Szasz, both of Vienna, Austria, assignors to TMC Corporation, Baar, Switzerland
Filed Feb. 6, 1979, Ser. No. 9,824
Claims priority, application Austria, Feb. 7, 1978, 827/78
Int. Cl.³ A63C *7/10*
U.S. Cl. 280—605 **6 Claims**



1. In a ski brake comprising pivotal support means adapted to be secured to an upper surface of a ski, two braking arms and a pedal means swingable about a pivot axis of said pivotal support means against a spring force between a braking position, in which said two braking arms are both arranged adjacent lateral edges on said ski and project below a bottom surface of said ski with said pedal means extending upwardly inclined relative to said upper surface of said ski, and a retracted position, in which said ski brake is pressed down upon by a ski boot acting on said pedal means and urged toward said upper surface of said ski and in which the free ends of said two braking arms are swung in an inwardly direction toward the central longitudinal axis of said ski above said upper surface of the ski, the improvement comprising wherein means are provided on said pedal means for supporting said braking arms for pivotal movement relative to said pedal means to effect the aforesaid inward swinging movement of said braking legs, wherein said pedal means is a flat member, wherein said two braking arms are formed from a one piece wire bar member, wherein said wire bar member includes an integral elastically flexible spreadable means, separate from and spaced from said means on said pedal means, for urging said free ends of said brake arms laterally away from said longitudinal axis of said ski when said ski brake is free of association with said ski boot, said elastically flexible spreading means having a generally U-shaped elastically flexible part arranged symmetrically with respect to said central longitudinal axis of said ski brake, said U-shaped part having two wire leg segments which extend parallel with respect to said central longitudinal axis which in turn are connected to said braking arms, wherein a fingerlike projection is movably mounted on said wire bar member adjacent said two wire legs for movement against the force of a spring between a first location spaced from said two wire leg segments when said braking arms are in said braking position of the ski brake and a second location engaging and separating said two wire leg segments for effecting a movement of said free ends of said braking arms above said upper surface of said ski toward said longitudinal axis of said ski when said ski brake is in said retracted position, said fingerlike projection causing said movement of said free ends of said braking arms against the force of said elastically flexible U-shaped part.

4,279,433
EMERGENCY LOCATOR BEACON FOR SKIS
Danny A. Petaja, P. O. Box 4519, Aspen, Colo. 81611
Filed Apr. 30, 1979, Ser. No. 35,030
Int. Cl.³ A63C *7/10, 11/22*
U.S. Cl. 280—605 **16 Claims**



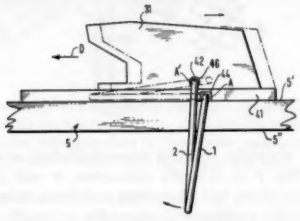
1. A device for locating ski equipment separated from a skier comprising:
- an electrical signaling device for emitting visible light, said signaling device having a light intensity sufficient to be visible through snow to establish location of said signaling device;
- circuit means coupled to said signaling device for powering said signaling device, said circuit means being operative to intermittently discharge said signaling device upon triggering;
- means for housing said signaling device and said circuit means, said housing means being adapted to be carried by said ski equipment; and
- means operative to sense separation of said skier from said ski equipment including said housing means for triggering said circuit means upon said separation.

4,279,434
SKI BRAKE
Tilo Riedel, Eching, Fed. Rep. of Germany, assignor to S. A. Etablissements Francois Salomon & Fils, Annecy, France
Division of Ser. No. 815,364, Jul. 13, 1977, abandoned. This application Sep. 5, 1979, Ser. No. 72,626
Claims priority, application Fed. Rep. of Germany, Jul. 21, 1976, 2632849
The portion of the term of this patent subsequent to Feb. 13, 1996, has been disclaimed.
Int. Cl.³ A63C *7/10*
U.S. Cl. 280—605 **10 Claims**

1. A ski brake for use on a ski having a snow-engaging lower surface and a boot-carrying upper surface and normally adapted to travel forwardly in a predetermined travel direction, said ski brake comprising:
- a pivot on said ski defining an immovable pivot axis fixed relative to said ski and extending generally parallel to said surfaces and transverse to said direction;

a guide on said ski defining a slidable pivot axis generally parallel to and spaced from said immovable pivot axis and displaceable between an unactuated position relatively far from said immovable pivot axis and an actuated position relatively close to said immovable pivot axis;

a brake element having a guided leg having one end pivoted in said guide at said slidable pivot axis and a pivot leg having one end pivoted in said pivot about said immovable pivot axis, said legs having opposite joined-together ends, said brake element being displaceable between a braking position with said slidable axis in said unactuated position and said legs extending at an acute angle to each other and downwardly below said lower surface and a rest position with said legs extending generally parallel to



said direction, lying above said surfaces, and with said slidable axis in said actuated positions;

actuator means including an actuator slidable in said direction on said ski between an advanced position relatively far from said fixed pivot axis and a depressed position relatively close to said fixed pivot axis and spaced from said advanced position for displacing said braking element from said braking into said rest position on displacement from said advanced into said depressed position, said actuator being pivotally connected to said one end of said guided leg; and

spring means in said legs for urging same into said braking position, for urging said actuator means into said advanced position, and for urging said slidable pivot axis into said unactuated position.

4,279,435

GAS RISER APPARATUS

Sam Alewitz, Painesville, Ohio, assignor to Perfection Corporation, Madison, Ohio

Continuation of Ser. No. 922,366, Jul. 6, 1978, abandoned, which is a continuation of Ser. No. 686,939, May 17, 1976, abandoned, which is a division of Ser. No. 495,200, Aug. 6, 1974, Pat. No. 3,987,820, which is a continuation-in-part of Ser. No. 349,681, Apr. 10, 1973, abandoned. This application Sep. 26, 1979, Ser. No. 79,038

Int. Cl.³ F16L *11/12, 33/00*

U.S. Cl. 285—242 **2 Claims**

1. A metal-to-plastic pipe joint comprising in combination:

a plastic pipe having an end;

a metal pipe having an end;

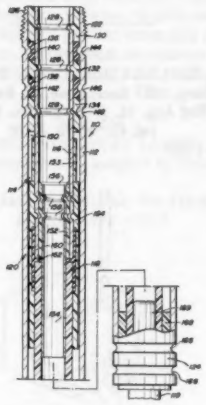
a nonmetallic sleeve disposed within said metal pipe at said end thereof;

a reinforcing metal stiffener sleeve disposed within said nonmetallic sleeve and having a portion thereof extending outwardly therefrom;

said metal stiffener sleeve, said nonmetallic sleeve and said metal pipe being secured together;

said metal pipe being disposed in essentially abutting relationship to said plastic pipe with a seal disposed therebetween and said portion of said stiffener sleeve disposed within said plastic pipe;

a sealing gasket surrounding at least a portion of both of said metal pipe and said plastic pipe;



a nonmetallic outer sleeve tightly surrounding said sealing gasket and the adjacent ends of said metal pipe and said plastic pipe.

4,279,436

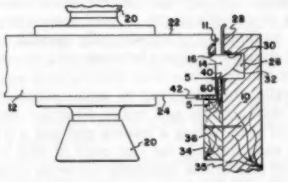
DOOR LOCK GUARD PROTECTOR

Harold Heffel, 7 Iota Pl., Saginaw, Mich. 48603

Filed Nov. 1, 1976, Ser. No. 737,538

Int. Cl.³ E05C *21/00*

U.S. Cl. 292—346 **3 Claims**



1. In combination:

a hinged door;

a door frame having a stop rail, against which said door closes, and a bolt receiving opening therein;

said door having a lock with a retractable bolt engageable in said jamb by extending out of a free end face of said door into said opening;

a door lock guard comprising:

an elongate body, being L-shaped in cross section, including

a mounting flange having an outer surface for attachment to one of said door frame and said door and an inner surface lying in a predetermined plane; and

an abuttment flange integral with, and at right angles to, said mounting flange, for abutting a portion of said stop rail when said door closes; and

means for mounting said body on one of said door and said frame adjacent said bolt;

said mounting flange including an impermeable portion laterally, adjacent said opening, having a plurality of projections projecting beyond said plane toward said door to impede the passage of a burglary tool between said door guard and said one of said door frame and said door;

said projections comprising a plurality of longitudinally and laterally spaced teeth projecting therefrom;

said inner surface including a plurality of recesses immediately adjacent said teeth;

said teeth projecting unequal distances from said inner surface.

4,279,437

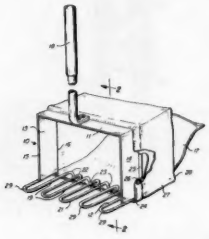
REFUSE COLLECTING TOOL

Herman Goldbarg, 1857 Beechwood, St. Paul, Minn. 55116

Filed Aug. 11, 1977, Ser. No. 823,604

Int. Cl.[3] A47F *13/06*

U.S. Cl. 294—1 BB **8 Claims**



1. A tool for collecting refuse, consisting essentially of an orifice structure formed of frame means approximating an inverted U-shape in appearance and a collector span extending between the terminal ends of the two legs of said U-shape, and an elongated handle member extending outwardly from the perimeter of said orifice structure opposite said collector span thereof, said orifice structure having an exit side opposite the anterior entrance side thereof, an abutment means at said exit side for retaining the throat of a refuse receiving bag thereabout with said throat clinging anterior to and proximate to said exit side thereof as refuse is collected with said tool, and being further characterized in that said collector span thereof consists of a single length of wire looped back and forth to form a multiplicity of substantially parallel spaced stretches thereof arranged in series between said terminal ends of said two legs and lying in a plane transverse to said legs, whereby said parallel stretches form an upper planar refuse gathering surface facing inside said orifice structure, each said parallel stretch of wire having a leading end and a trailing end, said trailing ends forming the exit edge of said refuse gathering surface of said orifice structure, the loops connecting pairs of adjacent parallel stretches of said wire at said leading ends thereof serving as blunt projections not likely to pierce refuse, the loops connecting pairs of adjacent parallel stretches of said wire at said trailing ends thereof being outwardly disposed offset interconnections with respect to said refuse gathering surface, whereby said offset interconnections do not present an obstruction to sliding movement of refuse through said orifice structure on said refuse gathering surface and off said exit edge thereof, said offset interconnections serving as the aforesaid abutment means and being the means against which the lower span of the throat of a refuse receiving bag abuts and is held in position underneath the exit edge of said refuse gathering surface.

4,279,438

TIRE LOADER

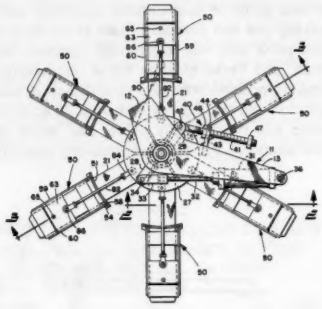
Anand P. Singh, Youngstown, Ohio, assignor to NRM Corporation, Akron, Ohio

Continuation of Ser. No. 872,421, Jan. 26, 1978, abandoned. This application Nov. 19, 1979, Ser. No. 95,586

Int. Cl.[3] B29H *5/02*; B66C *1/54*

U.S. Cl. 294—88 **17 Claims**

7. A tire loader comprising a movable frame, a horizontal plate mounted for rotation on a vertical axis, loader shoes mounted on said frame for radial movement to and from a common center, and respective link means interconnecting said plate and each shoe, each link means extending at a common angle with respect to a radius whereby rotation of said plate in one direction will reduce said angle thus moving said shoes radially outwardly and rotation of said plate in the opposite direction will increase said angle thus moving said shoes



radially inwardly, said link means including adjustable length connecting rods hingedly connected to said plate and the respective shoes, said connecting rods being independently and substantially continuously adjustable in length through a selected range.

4,279,439

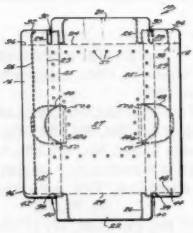
MOLDED LINER FOR PICKUP TRUCKS

Thomas B. Cantieri, P.O. Box 626, Farmville, Va. 23901

Filed Sep. 14, 1979, Ser. No. 75,592

Int. Cl.[3] B62D *33/00*

U.S. Cl. 296—39 R **8 Claims**



1. A liner for protecting the exterior bed of a vehicle, comprising:

a mat of flexible material, generally conforming to said exterior bed; and

suction means affixed to the underside of said mat, for removably securing said mat to said bed spaced apart from said bed;

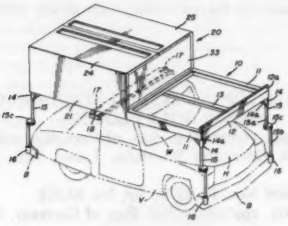
said mat having drainage holes extending through said mat; whereby drainage of moisture is effected, the space between said mat and said bed providing for ventilation to dry said moisture; and

means for adapting said liner to a plurality of bed configurations.

4,279,440
MOTOR VEHICLE CAMPER

Russell J. Golding, Sr., 1823 Manchester Rd., Akron, Ohio 44314

Filed Nov. 17, 1978, Ser. No. 961,678
Int. Cl.³ B60P 3/34
U.S. Cl. 296—164 14 Claims

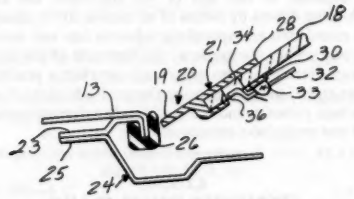


1. A demountable motor vehicle camper, comprising;
(A) a generally rectangular frame substantially corresponding in planar configuration to the planar configuration of the motor vehicle said frame having a first and a second part;
(B) support means for releasably securing said frame to said motor vehicle above the top plane thereof;
(C) said first first compartment assembly secured to a part of said frame;
(D) a second compartment assembly carried by said frame and slidable thereon into and out of said first compartment along the longitudinal axis of said vehicle
(1) whereby said second compartment assembly is supported on the said second part of said frame when extended from said first compartment assembly; and
(E) said support means being capable of supporting said frame and said first and second compartment assemblies in freestanding condition when released from said motor vehicle.

4,279,441
AIR DEFLECTOR AND PIVOTABLE ROOF VENT PANEL APPARATUS FOR VEHICLE ROOFS

Heinz C. Prechter, and Milton C. Kaltz, both of Ypsilanti, Mich., assignors to American Sunroof Corporation, Southgate, Mich.

Filed Jun. 27, 1979, Ser. No. 52,627
Int. Cl.³ B60J 7/10
U.S. Cl. 296—218 9 Claims

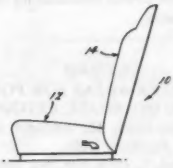


1. A roof structure for a vehicle having an opening in the roof comprising:
an air deflector disposed in said roof opening, said air deflector being pivotable about an axis extending transverse to the longitudinal axis of said vehicle between a down position in which said air deflector is in substantial registry with the adjoining roof structure of said vehicle and an upward, forward-inclining position; and
a roof vent panel removably received in said air deflector such that said air deflector and said roof vent panel pivot together as a unit about said transverse axis between a closed, sealing position and an open, forward-inclining, venting position, said roof vent panel being removable from said air deflector, with said air deflector remaining in said forward-inclining position when said roof vent panel is removed therefrom to direct air currents flowing across said roof of said vehicle away from said opening therein.

4,279,442
RECLINING SEAT LATCH

Robert L. Bell, Oxford, Mich., assignor to Fisher Corporation, Troy, Mich.

Filed Jan. 14, 1980, Ser. No. 111,600
Int. Cl.³ A47C 1/025
U.S. Cl. 297—367 3 Claims



1. A latch mechanism for controlling rotation of a vehicle seat back to a reclining position relative to a vehicle seat, said mechanism comprising
a pivot pin joining said seat and seat back for relative rotation,
a quadrant secured to said pivot pin for rotation relative to both said seat and seat back,
stop means on said quadrant for defining the position of said seat back relative to said quadrant,
an arm extending between said seat and said quadrant for controlling the position of said quadrant, said arm being pivotally connected to said quadrant at a point radially spaced from said pivot pin and having spaced teeth on opposite sides thereof,
a manual operator pivoted on a first pin on said seat and having a slot therein spaced from the first pin for the control of a second pin,
a pair of spaced pawls on said first and second pins having teeth complementary to the teeth on said arm, said pawls being movable relative to said arm to effect engagement and release thereof, whereby said arm is latchable against movement when said pawls are engaged therewith and movable when released to position said quadrant and seat back at a desired rotational position relative to said seat,
a first pawl control plate mounted on said first pin for rotation and reciprocation relative thereto, and
a second pawl control plate having a plurality of fingers engaged with said arm in slidable relationship for controlling the position of said arm, movement of said second pin effecting movement of said second pawl control plate and said arm away from said first pin.

4,279,443
MINING APPARATUS

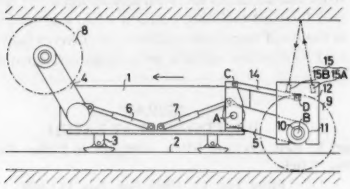
Ken Takahashi, Tokyo, and Tsunetoshi Ito, Yokohama, both of Japan, assignors to Taiheiyo Engineering, Tokyo, Japan

Filed Oct. 11, 1979, Ser. No. 83,871
Claims priority, application Japan, Jul. 13, 1979, 54-88090
Int. Cl.³ E21C 35/08
U.S. Cl. 299—1 11 Claims

1. A mining apparatus comprising
(A) an apparatus body,
(B) a drum rotating shaft,
(C) a board connected to said rotating shaft,

(D) a linking bar pivotably connecting said apparatus body with said board, and

(E) a position detection device mounted on said board com-



prising at least one pair of projectors with the intersection of paths from said projectors at a distance away from said position detection device determining the position of said apparatus in a mine.

4,279,444

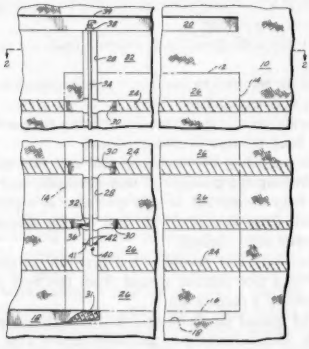
JETTING OUT WEAK AREAS FOR FORMING AN IN SITU OIL SHALE RETORT

James Kilburn, Idaho Falls, Id., assignor to Occidental Oil Shale, Inc., Grand Junction, Colo.

Filed Jan. 7, 1980, Ser. No. 109,838

Int. Cl.³ E21B *43/247, 43/263*

U.S. Cl. 299—2 **18 Claims**



1. A method for recovering liquid and gaseous products from an in situ oil shale retort in a subterranean formation containing oil shale and having at least one zone of formation within an in situ oil shale retort site that is weaker than a remaining zone of unfragmented formation within the retort site, the method comprising the steps of:

excavating a lower level drift at a lower region of the retort site;

drilling, through the retort site, a generally vertical bore hole that opens into the lower level drift;

directing fluid under pressure against the weaker zone of formation within the retort site from at least one jet nozzle placed in said bore hole adjacent said weaker zone for eroding into particle form formation from said weaker zone and removing such formation particles for forming a void in the weaker zone adjacent a remaining zone of unfragmented formation;

passing formation particles eroded from said weaker zone through the bore hole and into the lower level drift;

placing explosive in the remaining zone of unfragmented formation within the retort site;

detonating such explosive for explosively expanding such remaining zone of unfragmented formation toward the void for forming a fragmented permeable mass of formation particles containing oil shale in an in situ oil shale retort;

establishing a combustion zone in the fragmented mass;

introducing an oxygen-supplying gas to the fragmented mass for sustaining the combustion zone in the fragmented mass and for advancing the combustion zone through the fragmented mass; and

withdrawing liquid and gaseous products from the fragmented mass on the advancing side of the combustion zone.

4,279,445

LONGWALL MINING INSTALLATION HAVING STABLE-HOLE PLOUGH

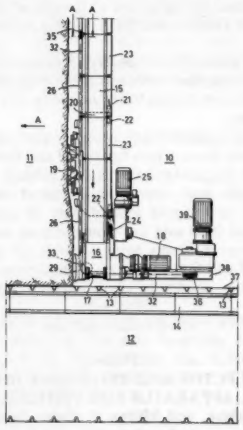
Alois Hauschopp, Werne, Fed. Rep. of Germany, assignor to Gewerkschaft Eisenhutte Westfalia, Lunen, Fed. Rep. of Germany

Filed Nov. 13, 1979, Ser. No. 93,831

Claims priority, application Fed. Rep. of Germany, Nov. 18, 1978, 2850175

Int. Cl.³ E21C *27/34*

U.S. Cl. 299—34 **22 Claims**



1. A longwall mineral mining installation comprising a longwall conveyor, a guide attached to the face-side of the conveyor, a main plough movable to and fro along the guide, and an auxiliary plough movable to and fro along a portion of the guide adjacent to one end of the conveyor, the auxiliary plough being driven by means of an endless drive chain which passes round two end sprockets, wherein one end sprocket is positioned within the guide at the face-side of the conveyor part way therealong, the other end sprocket is positioned at said one end of the conveyor on the goaf-side thereof, and the drive chain passes round a direction-changing unit positioned at said one end of the conveyor.

4,279,446

SEGMENTED WHEEL CLAMP

Richard W. Bushmeyer, Burlington, and Thomas M. Schwabe, Hales Corners, both of Wis., assignors to J. I. Case Company, Racine, Wis.

Filed Jan. 25, 1980, Ser. No. 115,462

Int. Cl.³ B60B *23/00*

U.S. Cl. 301—20 **3 Claims**

1. In a wheel assembly including an axle hub sub-assembly and a concentrically mounted wheel rim, said wheel rim including at least one radially, inwardly projecting ring-like rim locator, the improvement comprising:

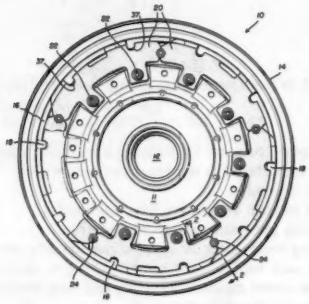
a plurality of rim clamping devices being mounted side-by-

side between said axle hub sub-assembly and said wheel rim thereby forming a substantially continuous annular mounting ring assembly;

each of said clamping devices including an arcuately shaped, generally planar, main body portion, said main body portion including an outer arcuate edge portion, an inner arcuate edge portion, and transverse end portions, a plurality of offset, pressure applying surfaces being integrally formed with said main body portion along said outer arcuate edge portion of said main body portion, spaced-apart depending leg portions being formed on said inner arcuate edge portion, each pressure applying surface extending in a direction which is transverse to the longitudinal axis of said generally planar arcuately shaped main body portion, and a plurality of said pressure applying surfaces extending in a first transverse direction and the remaining pressure applying surfaces extending in a second transverse direction, opposite to said first transverse direction;

each of said depending leg portions extending radially and means for mounting the depending leg portions of said clamping devices to said axle hub sub-assembly, and said pressure-applying surfaces of said clamping devices gripping said rim locator to thereby provide load transfer between said axle hub sub-assembly and said concentric wheel rim; and

the transverse end portions of each clamping device including semi-circular recesses, the opposed semi-circular recesses on the end portions of a pair of side-by-side clamping devices forming a mounting opening, adjusting means being secured within said mounting opening for forcing the ends of the respective clamping devices and the pressure applying surfaces outwardly thereby providing a uniform clamping force against said rim.



4,279,447

BRAKE OIL PRESSURE CONTROLLING VALVE DEVICE FOR VEHICLE USE

Mitsutoyo Mizusawa, Ueda, Japan, assignor to Nissin Kogyo Kabushiki Kaisha, Ueda, Japan

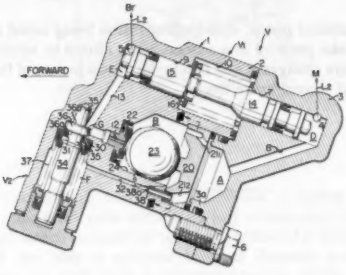
Filed Sep. 20, 1979, Ser. No. 77,491

Claims priority, application Japan, Nov. 9, 1978, 53-138197

Int. Cl.³ B60T *8/14*

U.S. Cl. 303—6 C **2 Claims**

1. A brake oil pressure controlling valve device for vehicle use, comprising a valve casing formed therein with an input port communicating with the brake master cylinder and an output port communicating with the rear wheel brakes, a partition plate fitted in said valve casing to define in the interior thereof a damping chamber communicating with said input port and a valve chamber communicating with said output port by way of a valve port, said partition plate being formed therein with a first communication hole to place the damping and valve chambers in fluid communication with each other, a weighted valve element arranged in said valve casing and movable to close said valve port in response to the vehicle deceleration exceeding a predetermined value, a pair of smaller-diameter and larger-diameter cylinder bores formed in a side wall portion of said valve casing in substantially axially aligned relation to each other, a pair of smaller-diameter and larger-diameter pistons endwise held against each other and slidably fitted respectively in said smaller-diameter and larger-diameter cylinder bores to define in said smaller-diameter cylinder bore a main input oil pressure chamber communicating with said input port and in said larger-diameter cylinder bore a main output oil pressure chamber communicating with said output port, spring means arranged on said larger-diameter piston to bias the latter axially in the direction of said main output oil pressure chamber under a definite spring bias, an auxiliary input oil pressure chamber formed in said valve casing and communicating with said damping chamber by way of a second communication hole formed in said partition plate and a duct passage formed in the adjacent wall of said valve casing, an auxiliary output oil pressure chamber formed in said valve casing in fluid communication with said main output oil pressure chamber, an auxiliary control valve arranged between said auxiliary input and output oil pressure chambers and operable under the oil pressure in said auxiliary output oil pressure chamber exceeding a predetermined level to close fluid communication between said auxiliary input and output oil pressure chambers or to reduce the level of oil pressure being transmitted from said auxiliary input oil pressure chamber to said auxiliary output oil pressure chamber, and a tubular positioning pin fitted in said second communication hole and said duct passage at the juncture therebetween to hold said partition plate against rotation while placing said second communication hole and said duct passage in fluid communication with each other.



4,279,448

BRAKE POWER CONTROL UNIT FOR TWO-CIRCUIT BRAKE SYSTEMS INCORPORATING A LOCKING PISTON OPERATED HYDRAULICALLY

Volker Berisch, Hattersheim, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Mar. 31, 1980, Ser. No. 135,580

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1979, 2915293

Int. Cl.³ B60T *8/02*

U.S. Cl. 303—6 C **7 Claims**

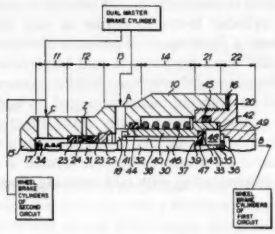
1. A brake power control unit for two-circuit brake systems comprising:

a housing having a longitudinal axis;

a control piston disposed within said housing disposed coaxial of said axis to control brake pressure in a first brake circuit, the brake pressure in said first brake circuit being changed in a relationship determined by said control piston after a given change-over pressure determined by active surfaces of said control piston and the force of a

first spring operating on said control piston has been exceeded; and

a locking piston disposed in said housing coaxial of said axis having a major portion thereof within a major portion of



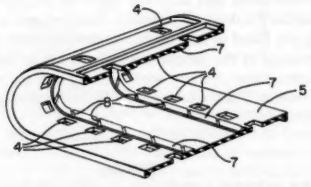
said control piston, said locking piston being acted upon by brake pressure in a second brake circuit to neutralize pressure changes in said first brake circuit in case of failure of said second brake circuit.

4,279,449

SLIDE SURFACE COMPOUND FOR TRACK-DRIVEN VEHICLE

Billy P. Martin, and Vernon V. Vanis, both of Lincoln, Nebr., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jul. 20, 1978, Ser. No. 926,183
Int. Cl.³ C08J *3/20*; C08K *3/30, 5/54*
U.S. Cl. 305—35 EB **9 Claims**



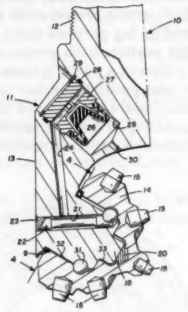
1. A flexible endless belt track for a track-driven vehicle, said belt track having an outer ground-contacting surface to provide traction and an opposite inner surface which is adapted for moving contact with rigid elements of the vehicle drive means and the belt track supporting means, said inner surface including at least one surface portion of elastomeric material comprised of at least one vulcanized rubbery composition, said rubbery composition consisting of (A) from about 10 to about 35 parts of at least one polybutadiene polymer having a total 1,4 content of from about 80% to 100%, a cis 1,4 content of at least 10% and a combined cis 1,4 plus 1,2 content of at least 30% and (B) from about 65 to about 95 parts of two different rubbery polymers, said parts being by weight per 100 parts of (A) plus (B), and 10 to 35 parts of molybdenum disulfide and 3 to 7 parts of a mercaptosilicone or a mercaptosilane, said surface portion being adapted to come into direct moving contact with said rigid elements.

4,279,450

ROTARY ROCK BIT FLUID CENTER SEAL

Jerald D. Morris, Desoto, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Oct. 4, 1979, Ser. No. 81,739
Int. Cl.³ F16C *33/72*; E21B *9/08*
U.S. Cl. 308—8.2 **1 Claim**



1. A rotary rock bit for forming a borehole wherein materials are encountered in the borehole, comprising:

a rock bit body;

a rock bit arm depending from said body;

a bearing pin projecting from said arm;

a rolling cone cutter mounted concentrically on said bearing pin, said rolling cone cutter having a cavity projecting from a cone mouth, said cavity and cone mouth positioned over said bearing pin;

bearing means in said cavity between said bearing pin and said rolling cone cutter;

said cone mouth defining an annular groove open toward said pin;

an annular flexible seal member positioned in said groove providing sealing engagement between the walls of said groove and said pin for preventing entry of materials from the borehole into said concave cavity;

said seal member having a sealed annular hollow core completely filled with a non-compressible fluid; whereby during drilling said concentric relationship between said pin and said core is altered thereby radially compressing the flexible seal member in one area and forcing the enclosed fluid to an opposite area to expand the seal to fill the expanded radial space between the pin and cone a like amount to maintain an annular sealing engagement between the pin and core cavity.

4,279,451

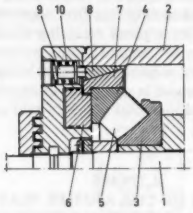
DEVICE FOR OBTAINING AXIAL MOBILITY AND AVOIDING RADIAL PLAY OF A BEARING RING IN RELATION TO A BEARING SEAT

Helge Heldt, Partille, Sweden, assignor to Aktiebolaget SKF, Goteborg, Sweden

Filed Nov. 29, 1979, Ser. No. 98,682
Claims priority, application Sweden, Dec. 19, 1978, 7813014
Int. Cl.³ F16C *27/04*
U.S. Cl. 308—26 **3 Claims**

1. A device for obtaining axial mobility and avoiding radial play of a bearing ring in relation to a bearing seat, characterized by that it comprises an elastically deformable annular member (8) with a cylindrical surface facing a corresponding cylindrical surface in connection to the bearing seat or the bearing ring, and a tapered surface contacting a corresponding tapered surface in connection to the bearing or the bearing seat, and members (9, 10) for urging said annular member axially on the last mentioned surface, thereby deforming said annular member until play is eliminated and a light contact

pressure is established in relation to the bearing seat or the bearing, the cone angle and the coefficient of friction of said



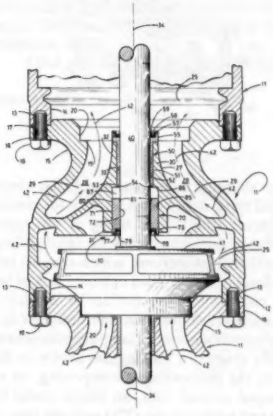
tapered surfaces being such that self-locking is avoided in the tapered contact.

4,279,452

BEARING ASSEMBLY

Larry C. Naffziger, Fresno, Calif., assignor to Bank of America N.T. & S.A., Fresno, Calif.

Filed May 24, 1979, Ser. No. 42,143
Int. Cl.³ F16C *33/10, 33/74*
U.S. Cl. 308—36.1 **2 Claims**



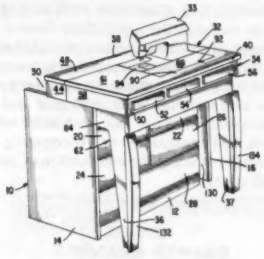
1. A bearing assembly for water pumps and the like having a submersible pump housing with a central bore through which a drive shaft is adapted to be extended for rotation about an axis of rotation and a counterbore disposed in axial alignment with the central bore concentric to the axis of rotation, the bearing assembly comprising a first bearing sleeve having an external diameter adapted to be fitted in fixed position in said central bore and a cylindrical internal passage having a diameter adapted to receive the drive shaft in fitted rotational relation and the internal passage having an end portion with a substantially conical surface convergent in the direction of said internal passage; a second bearing sleeve having an external diameter adapted to be fitted in fixed position in said counterbore spaced from the end portion of the first bearing sleeve to define a reservoir for lubricant therebetween, a cylindrical internal passage having substantially the same diameter as said internal passage of the first bearing sleeve for receipt of the drive shaft in rotational relation and having a substantially conical surface convergent in the direction of said internal passage of the second bearing sleeve; and resilient rings individually borne by each sleeve remote from the lubricant reservoir, facing outwardly of the bearing assembly and flexible under fluid pressure to form a barrier against the penetration of fluid and particulate matter into said sleeves while permitting lubricant to pass therethrough outwardly of the bearing assembly to urge particulate matter from the bearing assembly.

4,279,453

COMBINED CHEST OF DRAWERS AND SEWING MACHINE TABLE

Robert V. Haas, Edison, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Mar. 24, 1980, Ser. No. 132,938
Int. Cl.³ A47B *77/10, 29/00*
U.S. Cl. 312—282 **8 Claims**



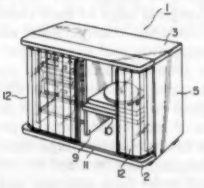
1. In combination, a chest of drawers, a sewing machine supporting work table including a pair of front legs, and parallel links which connect the table to the chest of drawers and on which the table is movable between alternate positions of engagement with table supporting portions of the chest of drawers in an arc carrying the legs over an underlying surface, the table in one of the alternate positions being disposed with the top thereof extending over and providing a top for the chest of drawers, the table in the other of the alternate positions being disposed with the top projecting frontally therefrom a substantial distance and the legs separated from the chest with room under the table in front of the chest of drawers between the legs of the table for the legs of a sewing machine operator.

4,279,454

CABINET WITH FOLDABLE SLIDING DOORS

Kazuhiro Koiso, Katano; Masaaki Sanda, Hirakata; Mamoru Hayashi, Katano, and Hiroaki Uesugi, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 5, 1979, Ser. No. 72,582
Claims priority, application Japan, Sep. 8, 1978, 53/124298[U]; Sep. 8, 1978, 53/124299[U]
Int. Cl.³ E06B *9/14*
U.S. Cl. 312—297 **8 Claims**



1. In a cabinet including:
a cabinet body having an open front portion, side portions and a rear portion;
a rail located within said cabinet body;
at least one glass door arranged to cover the open front portion of said cabinet body, said glass door comprising a

plurality of glass strips aligned in juxtaposition with each other, each of said glass strips having opposing end portions and opposing side edge portions, the side edge portions of adjacent strips adjoining each other;

a flexible belt secured to the end portions of said glass strips, said flexible belt flexibly connecting adjacent glass strips to each other;

a fastening element attached to an end portion of at least one glass strip, said fastening element guiding said glass strips along said rail, the improvement wherein said fastening element comprises

a pair of side walls having a groove therebetween for receiving an end portion of one of said glass strips together with said flexible belt, one of said side walls having at least one engagement recess in the top surface thereof, and

a metal piece having a main section provided with engagement pawls on the surface thereof and at least one engagement section for tightly engaging the engagement recess in said one side wall, the main section of said metal piece being positioned between said one side wall and said flexible belt, said engagement pawls engaging said flexible belt and thereby holding the end portion of said glass strip within said groove.

4,279,455

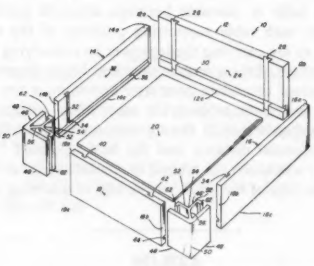
DRAWER ASSEMBLY

Philip J. Santo, 3750 Monroe Ave., Pittsford, N.Y. 14534

Filed Jan. 24, 1980, Ser. No. 115,063

Int. Cl.³ A47B *88/02, 47/00*

U.S. Cl. 312—330 R **8 Claims**



1. A furniture drawer of knock-down construction comprising:

a front panel having an outer face and an inner face, spaced apart grooves of female dove-tail configuration defined in said inner face adjacent and parallel to the vertical marginal edges of said front panel, and a groove defined in said inner face adjacent and parallel to the lower marginal edge of said front panel;

a pair of side panels having an outer face and an inner face, one vertical marginal edge of each respective side panel having male dove-tail configuration adapted to be received in a respective said spaced apart groove of said front panel, a groove defined in said inner face of each respective side panel adjacent and parallel to the opposite vertical marginal edge thereof, and a groove defined in said inner face of each respective side panel adjacent and parallel to the lower marginal edge thereof;

a rear panel having an outer face and an inner face, a groove defined in said inner face adjacent and parallel to the lower marginal edge of said rear panel, and a pair of grooves defined in said inner face adjacent and parallel to the vertical marginal edges thereof;

a bottom panel adapted to be received within respective grooves adjacent and parallel to the lower marginal edges of said front, side, and rear panels; and

means for securing said side panels to said rear panel upon assembly, said securing means including a pair of first members connected along a marginal edge and extending from one another at substantially a right angle, a pair of second members connected along a marginal edge and extending from one another at substantially a right angle, means for interconnecting said first members to said second members to form panel receiving channels therebetween, and tabs on said second members extending toward said respective first members, said tabs being respectively adapted to be received in said grooves adjacent and parallel to said vertical marginal edges of said side panel and rear panel.

4,279,456

ELECTRIC LINES OF THE ARMOR-PLATED TYPE, DESIGNED ESPECIALLY FOR ELECTRIC SYSTEM FOR INTERIORS

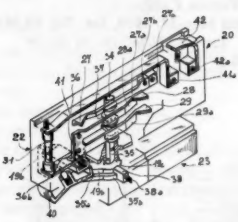
Guido Zucchini, Brescia, Italy, assignor to F. Lli Zucchini, Italy

Filed Sep. 28, 1979, Ser. No. 80,117

Claims priority, application Italy, Oct. 13, 1978, 5258 A/78; Oct. 13, 1978, 7085 B/78; Oct. 13, 1978, 7086 B/78

Int. Cl.³ H01R *9/00*

U.S. Cl. 339—32 R **3 Claims**



1. In a bipolar shunting device for multipolar electric lines of the armor-plated type, designed especially for electric systems for interior lighting, the device being of the type having a box-shaped contact unit, which may be fitted slidingly in substantially channel-shaped sections, which support internally, in an electrically insulated way, two opposite sets of longitudinal electric wires constituting the multipolar electric lines, and including a box-shaped connection unit designed to remain on the outside of the sections, and a clamping component, substantially of butterfly shape, for locking the device to the multipolar electric lines, the improvement comprising, on a same side of said box-shaped contact unit, an elastic metal blade (**27***a*) integral, at one end with a clamp (**27***c*) and carrying, at its other end, a contact (**27**) defined by a terminal fold of said elastic metal blade (**27***a*) and a U-shaped elastic metal foil (**36**) formed by two branches (**28***a*, **29***b*) carrying, at their ends, contacts (**28**, **29**) defined respectively by respective terminal folds of said branches, said U-shaped elastic metal foil (**36**) being electrically connected to a respective clamp (**41***a*) through a fuse (**31**) placed in correspondence with an inspection window (**30**) in said box-shaped contact unit, the device further including a first lever control (**35***a*) for the displacement of said contacts (**27**, **28**, **29**) from a position wherein they are inside said box-shaped contact unit to a position wherein they protrude sideways from said box-shaped contact unit and a separate lever control (**19***b*) for shifting said clamping component (**19**).

4,279,457

COVER PLATE FOR ELECTRICAL CONNECTOR

John G. Nickence, Montgomery, Ill., assignor to Belden Corporation, Geneva, Ill.

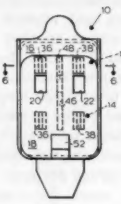
Filed Sep. 28, 1979, Ser. No. 79,716

Int. Cl.³ H01R *13/44*

U.S. Cl. 339—36 **7 Claims**

1. In an electrical connector of the type having first and second spaced-apart plug-in receptacles, each receptacle in-

cluding a pair of contact sockets for selectively receiving the prongs of a plug-type connector, the improvement comprising a cover plate attached to the electrical connector in longitudinally slidable relation above the spaced-apart receptacles, the cover plate having a length sufficient to cover or shield both receptacles, the cover plate forming a single pair of apertures



arranged in longitudinal alignment with the contact sockets of each receptacle, said apertures being located along the length of the cover plate to permit the cover plate to be slidably moved respectively to a first position shielding both receptacles, a second position simultaneously exposing one receptacle and shielding the other receptacle and a third position with both of the spaced-apart receptacles being exposed.

4,279,458

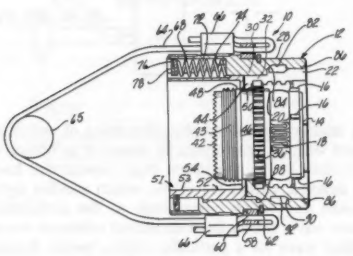
RELEASING ELECTRICAL CONNECTOR

Carl L. Knapp, Oneonta, N.Y., assignor to The Bendix Corporation, Southfield, Mich.

Filed Jul. 23, 1979, Ser. No. 59,935

Int. Cl.³ H01R *13/62*

U.S. Cl. 339—45 M **9 Claims**



1. A releasing electrical connector comprising:

a first electrical contact carrying connector body;

a second electrical contact carrying connector body movable into mating engagement with said first connector body by relative axial movement therebetween;

one of said first or second connector bodies being formed with a recess;

an operating sleeve received over said mated first and second connector bodies;

means for retaining said first and second connector bodies in axially mated relationship when said operating sleeve is in a first axial position relative thereto;

means for releasing said first and second connector bodies from mated relationship by axial disconnecting movement of said operating sleeve to a second axial position relative to said first axial position;

means for biasing said operating sleeve into said first axial position, said means comprising a segmented retainer housing having at least two retainer housing segments positioned together within said operating sleeve and about one of said first or second connector bodies, each of said retainer housing segments including an annular body section having a transverse portion turned radially inwardly, said transverse portions being positioned together and forming an inwardly turned flange with said retainer housing segments, said flange extending into said recess on said one of said first or second connector bodies; and

a spring, the spring acting on said retainer housing and said operating sleeve and resisting the axial movement of said operating sleeve from said first to said second axial position, whereby a separating force applied to said operating sleeve and said other of said first or second connector bodies sufficient to overcome said spring bias action produces release of said connector bodies.

4,279,459

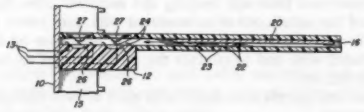
PRINTED WIRING BOARD AND CONNECTOR APPARATUS

Charles J. Sherman, Westminster, Colo., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 20, 1979, Ser. No. 105,558

Int. Cl.³ H01R *9/09, 13/029*

U.S. Cl. 339—75 MP **8 Claims**



1. Electrical interconnection apparatus comprising a printed wiring board (**20**) having a plurality of contact areas (**22**) thereon and a corresponding plurality of contact springs (**24**) for completing electrical circuits with said contact areas (**22**) characterized in that said plurality of contact areas (**22**) is arranged in a row substantially perpendicular to a leading edge of said board (**20**), and in a connector block (**12**) for mounting said springs (**24**) to extend from one face of said block in a row corresponding to said row of contact areas (**22**), guide means (**16, 17**) at two sides of said block (**12**) for admitting said board (**20**) and, thereby, said contact areas (**22**) into opposition with said springs (**24**) and means operating between said board (**20**) and said connector block (**12**) for ensuring simultaneous engagement of said contact areas (**22**) and corresponding springs (**24**) comprising cam means (**23**) for maintaining said contact areas (**22**) apart from said springs (**24**) and a corresponding recess (**26**) adapted and positioned to admit said cam means (**23**) only when said contact areas (**22**) and said springs (**24**) are in opposition.

4,279,460

ELECTRICAL CRIMP CONNECTOR FOR MAKING A CONNECTION BETWEEN AN INSULATED WIRE AND CONNECTING ELEMENT

Horst Forberg, Berlin, Fed. Rep. of Germany, assignor to Krone GmbH, Berlin, Fed. Rep. of Germany

Filed Mar. 26, 1979, Ser. No. 23,755

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1978, 2814069

Int. Cl.³ H01R *11/20*

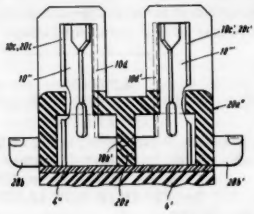
U.S. Cl. 339—97 P **10 Claims**

1. An electrical crimp connector for an insulated wire comprising:

an insulator formed of a plurality of interconnected insulating clamping elements and having a top portion and a smooth bottom surface, each of said clamping elements having a slot extending from said top portion towards the bottom surface;

a plurality of pairs of connecting elements, each pair of connecting elements being pluggable into a chamber in one of said clamping elements from said bottom surface of said insulator and being individually retainable therein, each pair of connecting elements being interconnected by a transverse web, each of said connecting elements includ-

ing a flat portion formed of a resilient, electrically conductive material and disposed at an angle of 45° with respect to said clamping element slot, and a slot disposed at the transverse center of said flat portion in communication with said clamping element slot, said connecting element slot having a widened opening facing said top portion of said clamping element and a lower portion having a width



narrower than said opening and narrower than the width of the metal core of an insulated wire, said lower portion having sharp edges adapted to cut insulation on an insulated wire and to contact the metal core of an insulated wire; and

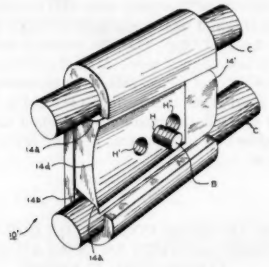
wire rod guides associated with each of said clamping elements.

4,279,461

WEDGE CONNECTOR

Michael R. Bussen, Arnold, and David F. Winter, Kirkwood, both of Mo., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Oct. 10, 1979, Ser. No. 83,373
Int. Cl.³ H01R *4/44, 4/50*
U.S. Cl. 339—246 **4 Claims**



1. A wedge connector for joining a pair of conductors in electrically conductive relationship therewith comprising, in combination:

a longitudinally extending spring member having a substantially C-shaped cross section which tapers from a first cross section at one end thereof to a smaller cross section at the other end thereof; and,

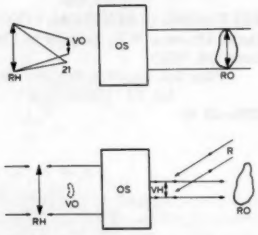
a longitudinally extending wedge member which is insertable into said spring member and the length of which is proportional to the length of said spring member, and having a generally trapezoidal cross section which tapers along the length of said wedge member to correspond to the taper of said spring member, and in which the distance between the longitudinal edges at points along one side of said wedge member is greater than the corresponding distance between the longitudinal edges along the other side of said wedge member, and wherein the sides of said wedge member which confront the arcuate inside portions of the C-shaped spring member respectively further include arcuately curved surface portions extending from points adjacent the longitudinal edges along said one side of said wedge member to intermediate points between the longitudinal edges of the confronting surface sides of said wedge member, whereby the respective arcuately curved portions of said C-shaped spring member and said wedge member form segments of an imaginary substantially circular line generally conforming to the circumference of said conductors, and wherein said confronting surface sides of said wedge member include tapered portions which are tapered toward the longitudinal axis of said wedge member in the direction away from said intermediate point and toward the longitudinal edges along said other side of said wedge member and, wherein said wedge member includes a substantially flat portion joining and extending a predetermined distance between said tapered and arcuately curved portions.

4,279,462

METHOD OF HOLOGRAPHIC PROCESSING OF WAVES

Okan K. Ersoy, Li, Norway, assignor to Sentralinstitutt for Industriell Forskning, Oslo, Norway

Filed Mar. 9, 1979, Ser. No. 19,187
Claims priority, application Norway, Mar. 9, 1978, 780832
Int. Cl.³ G03H *1/02*
U.S. Cl. 350—3.6 **17 Claims**



1. A method for holographic processing of waves wherein an object wave is transformed by means of an optical system, characterized in the generation of an unrecorded hologram, herein denoted virtual hologram, which satisfies optical requirements and which corresponds to the modulation of a reference wave, herein denoted virtual reference wave, with the object wave for a particular object, herein denoted real object, said virtual hologram being in the form of the image of a recorded hologram, herein denoted real hologram, which satisfies technological requirements, and which corresponds to the modulation of the transformed virtual reference wave, herein denoted real reference wave, with the transformed object wave, corresponding to the transformed particular object, herein denoted virtual object, and in the transformation of the real hologram by means of the optical system and a reconstruction wave, whereby the virtual hologram is generated and the real object is reconstructed therefrom.

4,279,463

COMBINATION SUN-MOON FILTER

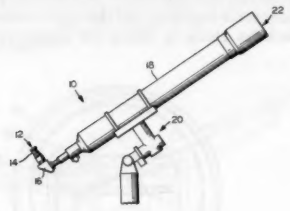
Robert T. Little, 160 Columbia Heights, Brooklyn, N.Y. 11201

Filed Sep. 7, 1979, Ser. No. 73,549
Int. Cl.³ G02B *23/00, 5/22*
U.S. Cl. 350—17 **16 Claims**

1. In a telescope having a front opening, a viewing opening, and an objective for focusing light rays traveling from said front opening to said viewing opening, the improvement comprising:

a. a first optical filter removably mounted on said telescope substantially at said front opening, said first filter passing only a portion of the light rays that strike it; and

b. a second optical filter removably mounted on said telescope so that light rays traveling from said objective to said viewing opening pass therethrough, said filter passing only a portion of the light rays that strike it, said first and second filters together reducing the light intensity to a first predetermined percentage suited to reducing the



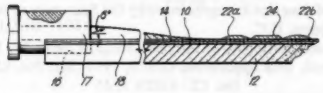
intensity of the sun's rays to a comfortable level, said second filter reducing the light intensity to a second predetermined percentage suited to reducing the intensity of the moon's rays to a comfortable level when said first filter is removed from said telescope, conversion from sun viewing to moon viewing thereby being possible by removal of said first optical filter.

4,279,464

INTEGRATED OPTICAL WAVELENGTH DEMULTIPLEXER

Ettore Colombini, Ottawa, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Dec. 18, 1979, Ser. No. 104,728
Int. Cl.³ G02B 5/14
U.S. Cl. 350—96.19 **7 Claims**



1. An integrated optical wavelength demultiplexer comprising a substrate, a thin film waveguide deposited on the substrate, input means for introducing multichromatic light from an optical fiber into the waveguide, collimating means within the waveguide for collimating the light at a wavelength dispersive element in the form of a thin-film prism, and focussing means within the waveguide for focussing specific wavelength components of the light separated by the dispersive element onto specific ones of an array of photodetectors formed underneath the waveguide.

4,279,465

DEVICE FOR TRANSMITTING AND RECEIVING OPTICAL DATA ON THE SAME OPTICAL TRANSMISSION LINE

Mario M. Vojvodich, Morris Plains, N.J., assignor to The Singer Company, Little Falls, N.J.

Filed Nov. 30, 1979, Ser. No. 99,236
Int. Cl.³ G02B 5/14
U.S. Cl. 350—96.20 **4 Claims**

1. A waveguide for the simultaneous transmission and reception of optical data along the waveguide comprising:

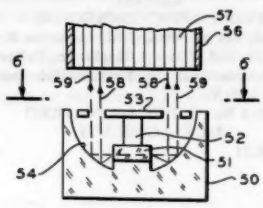
an elongate fiber optic cable assembly having opposite end portions with respective axes of symmetry,

said cable assembly including a first elongate radially inner cable portion with an end face and including a second elongate radially outer annular cable portion with an annular end face, said outer cable portion being arranged to surround said inner cable portion,

an emitter-photodetector assembly connected to each said cable assembly end portion coaxially therewith, and

modulating means connected to each said emitter-photodetector assembly for simultaneously transmitting signals in opposite directions respectively through said inner and outer cable portions, wherein

each said emitter-photodetector assembly comprises:



a pedestal connected to said cable assembly end portion coaxially therewith and having an inner ellipsoidal reflector surface with a focal point,

an emitter connected to said pedestal coaxially therewith and mounted at the focal point of said pedestal surface for transmitting a circular band of light to one of said cable portion end faces,

a photodetector connected to said emitter

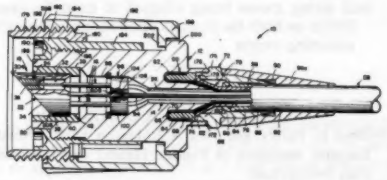
coaxially therewith and having a photodetector surface for receiving a pattern of light from the other of said cable portion end faces.

4,279,466

HERMAPHRODITIC FIBER OPTIC CONNECTOR

John A. Makuch, Danbury, and Kevin J. Monaghan, Middlebury, both of Conn., assignors to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Feb. 21, 1978, Ser. No. 879,186
Int. Cl.² G02B 5/14
U.S. Cl. 350—96.21 **50 Claims**



29. A hermaphroditic fiber optic connector for use in an assembly including a second identical hermaphroditic fiber optic connector for aligning mating ends of optical fibers in a pair of fiber optic cables comprising:

a rigid terminating member having a longitudinal bore dimensioned for receiving one of said fiber optic cables, said bore communicating with a longitudinal counterbore in a mating end of said rigid terminating member, said counterbore having a common axis with said bore and having a diameter larger than the diameter of said bore;

a cylindrical adapter disposed in said counterbore, said adapter having a hermaphroditic face exposed at said mating end of said rigid terminating member, said adapter being interchangeable with other adapters having different hermaphroditic faces;

a plurality of longitudinal optical fiber receiving bores in

said adapter, said optical fiber receiving bores being circumferentially spaced and having axes extending parallel to said common axis of said cable receiving bore and said counterbore and to one another, said optical fiber receiving bores receiving said optical fibers of said one fiber optic cable; and

means associated with said optical fiber receiving bores for securing said optical fibers of said one fiber optic cable in preselected positions relative to said mating end of said rigid terminating member.

4,279,467

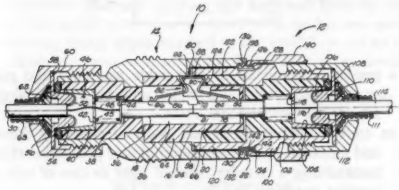
FIBER OPTIC CONNECTOR

Leslie M. Borsuk, Los Alamitos, Calif.; Catherine R. Ciardiello, Matthews, N.C., and Henry S. Heath, Jr., Fullerton, Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Nov. 5, 1979, Ser. No. 90,887

Int. Cl.³ G02B 5/14

U.S. Cl. 350—96.21 **12 Claims**



1. A fiber optic connector comprising:

first and second mating connector members each adapted to carry an optical fiber ferrule;

said first connector member having a passage therethrough adapted to receive the ferrules in its opposite ends;

said passage including a pair of longitudinally extending flat sides disposed at an angle relative to each other defining a generally V-shaped channel;

spring means in said passage adapted to be urged toward said channel for biasing the ferrules into said channel to align the optical fibers in the ferrules;

actuating means movable relative to said spring means for urging said spring means toward said channel; and

said spring means being adapted to exert forward biasing forces on both the ferrules upon actuation thereof by said actuating means.

4,279,468

OPTICAL FIBER CONNECTORS

Wilfred H. Turley, and John A. Robinson, both of Northampton, England, assignors to Plessey Handel und Investments AG, Zug, Switzerland

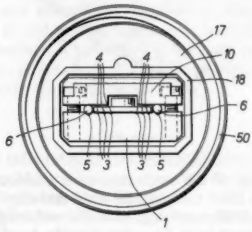
Continuation of Ser. No. 901,801, May 1, 1978, abandoned. This application Jan. 14, 1980, Ser. No. 112,085

Claims priority, application United Kingdom, May 2, 1977, 18239/77

Int. Cl.³ G02B 5/14

U.S. Cl. 350—96.21 **9 Claims**

1. An optical-fibre coupling connector, comprising two co-operating connector members, each member including a holder body having a surface provided with parallel channels each for accommodating an end portion of a fibre that is to be coaxially coupled with a similar fibre end accommodated in a corresponding channel of the other connector member, the connector further including locating-pin elements extending parallel to said channels and being fast in one connector member for guiding co-operation with a locating passage provided in the other connector member, the connector being characterised by the fact that the fibre-end accommodation channels are relatively narrow V-grooves provided in a flat surface of an alignment member of each connector member and having walls that converge towards the bottom of each groove, that said flat surface of each connector member is additionally provided with relatively wide pin-accommodation V-grooves having similarly convergent walls but greater width than said fibre-end accommodation V-grooves, for respectively accommodating the two end portions of each locating-pin element in the two connector members, and that each connector member further includes clamping means for urging said fibre ends



towards the bottom of said fibre-end accommodation V-grooves of said connector member and thus securing and, owing to the convergence of the walls of the V grooves, accurately locating said fibre ends, and for similar co-operation with said locating-pin elements to secure one end of each said locating-pin element in one connector member and guidingly clamp the other end of each locating-pin element in the other connector member by urging each of said ends towards the bottom of the corresponding pin accommodation V-groove.

4,279,469

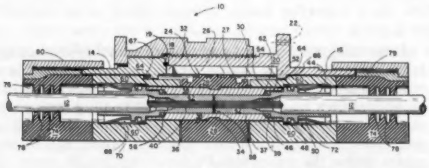
SEPARABLE FIBER OPTIC CABLE CONNECTOR

Donald B. Forman, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 581,310, May 27, 1975, abandoned. This application Oct. 3, 1977, Ser. No. 838,696

Int. Cl.³ G02B 5/16

U.S. Cl. 350—96.22 **14 Claims**



1. A separable fiber optic connector comprising:

male and female halves each having a central bore extending therethrough;

a resilient collar member concentrically secured within said bore portions said collar having at least one longitudinal opening extending therethrough;

a rigid sleeve member slidably mounted into said collar opening;

each end of said sleeve member adapted to receive the terminal end of a pair of respective fiber optic cables to be optically aligned together;

said resilient collar member enabling the rigid sleeve member to be longitudinally displaced from the respective collar opening from either side thereof;

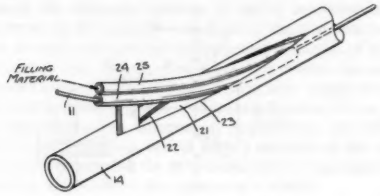
and means for maintaining said members in longitudinal relation within the connector.

4,279,470

OPTICAL CABLE ELEMENTS

Antonio Portinari, Sesto San Giovanni, and Sergio Longoni, Milan, both of Italy, assignors to Industrie Pirelli Societa per Azioni, Milan, Italy

Division of Ser. No. 898,081, Apr. 20, 1978, Pat. No. 4,212,097. This application Dec. 21, 1979, Ser. No. 106,034
Claims priority, application Italy, May 4, 1977, 23147 A/77
Int. Cl.[3] G02B *5/16*
U.S. Cl. 350—96.23 8 Claims



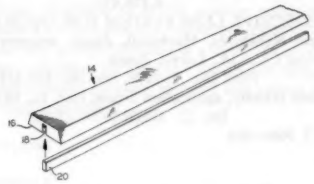
1. A unitary optical cable element comprising a self-sustaining tube of elastic material enclosing one or more fibers, said tube having an inner wall of a diameter larger than the diameter of a circle circumscribing the fiber or fibers and having a longitudinally extending cut therein which extends from the outer surface of the tube to the inner surface of the tube and which provides a pair of tube wall edge faces at opposite sides of the cut, the resilient nature of said tube being such that it inherently assumes a tubular cross-section and presses said edge faces against each other.

4,279,471

RETROREFLECTOR FOR ROAD SURFACES

William P. Rowland, Southington, Conn., assignor to Reflexite Corporation, New Britain, Conn.

Filed Dec. 31, 1979, Ser. No. 108,662
Int. Cl.[3] G02B *5/124*
U.S. Cl. 350—103 1 Claim



1. A retroreflective assembly for mounting on roadways and the like comprising:

A. an elongated housing of substantially transparent material having a base surface, a top surface, and side surfaces extending along the length thereof, said base surface defining a base plane upon which said housing may be supported, said housing having a channel extending perpendicularly upward from said base surface and terminating at a point spaced from said top surface by a predetermined distance, at least one of said side surfaces of said housing having a longitudinally extending planar light-reception surface portion lying in a plane that intersects an imaginary line extension of said channel at a point spaced above said top surface and at a predetermined acute angle; and

B. an elongated strip of retroflective sheet material snugly seated in said channel with a retroflective face disposed towards said planar surface portion of said housing, said retroreflective sheet material having retroreflective formations of cube-corner configuration spaced from said retroreflective face;

said predetermined spacing of said channel from said top surface being at least 0.020 inch;

the distance between said base surface and said top surface being less than 0.30 inch;

said predetermined acute angle being at least 8°, the refractive index of the housing material cooperating with said acute angle to cause light rays impinging on said planar surface portion to be refracted downwardly onto said retroreflective face of said strip and reflected therefrom outwardly through said planar portions in a direction substantially parallel to that of incidence thereon, the apparent position of said strip from a viewpoint of less than 8° above said plane of said base thereby being higher than the actual position of said strip; and

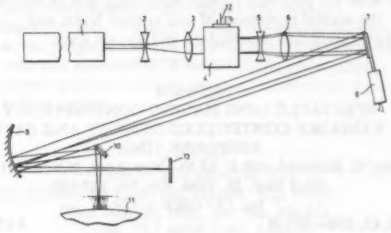
said housing providing an opaque upper surface, said retroreflective strip thereby being projected from sunlight impinging on said housing from above.

4,279,472

LASER SCANNING APPARATUS WITH BEAM POSITION CORRECTION

Graham S. B. Street, Impstone House, Pamber Rd., Silchester, Reading, RG7 2NU, England

Filed Nov. 30, 1978, Ser. No. 965,223
Claims priority, application United Kingdom, Dec. 5, 1977, 50603/77
Int. Cl.[3] G01J *1/20*
U.S. Cl. 250—201 11 Claims

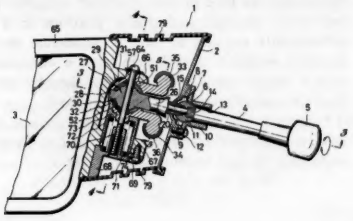


1. A scanning apparatus for generating a desired scan trace, comprising: a light source, a receiving surface, means for causing real or apparent movement of said light source relative to said receiving surface whereby a light beam from said light source is moved to scan a trace over said receiving surface in a scan direction, error detection means for continuously measuring one of said real or apparent position of said light source, and said position of said receiving surface, in a direction transverse to said scan direction and for comparing said position at each instant with the position required to provide the desired scan trace, an acousto-optic cell positioned in the light path between said light source and said receiving surface and arranged to cause said light beam from said light source to be deflected in said transverse direction, and means continuously responsive to said error detection means for influencing said deflection of said light beam in said acousto-optic cell to continuously generate a compensating deflection in said transverse direction so that the light impinges upon said receiving surface at each instant at the required point to generate the desired scan trace on the receiving surface.

4,279,473
REMOTE CONTROL MECHANISM

Toru Yamana, Fujieda, Japan, assignor to Murakami Kaimeido Co., Ltd., Japan

Filed Mar. 31, 1980, Ser. No. 135,288
Claims priority, application Japan, Apr. 9, 1979, 54-42680
Int. Cl.[3] G02B 7/18
U.S. Cl. 350—307 20 Claims

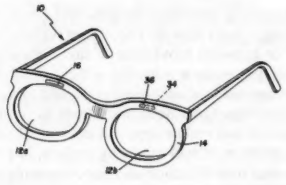


20. A remote control mirror assembly comprising:
(a) a base plate;
(b) a control lever supported on said base for pivotal movement, said control lever having a knob at its one end disposed at one side of said base plate;
(c) a pair of first arms fixedly mounted on said control lever at the other end of said control lever disposed at the other side of said base plate;
(d) a supporting stud fixed to said base plate and spaced from said control lever, said supporting stud being disposed at said other side of said base plate and extending away from said knob on the control lever;
(e) a pair of second arms pivotally supported on said supporting stud;
(f) a pair of spaced links pivotally connecting said first and second arms at their respective ends, whereby said second arms are pivotable on said supporting stud in response to the pivotal movement of said control lever; and
(g) a mirror unit mounted on said second arms.

4,279,474
SPECTACLE LENS HAVING CONTINUOUSLY VARIABLE CONTROLLED DENSITY AND FAST RESPONSE TIME

Barry M. Belgorod, 450 E. 63 St., New York, N.Y. 10021

Filed Mar. 25, 1980, Ser. No. 133,929
Int. Cl.[3] G02F 1/133
U.S. Cl. 350—331 R 8 Claims

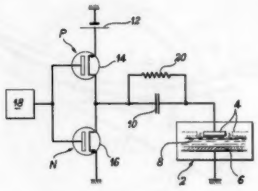


1. A spectacle lens having continously variable density, comprising a liquid crystal means within said lens for controlling light transmission through said lens as a function of an applied voltage, means for applying voltage pulses across said liquid crystal means, said pulses having a magnitude greater than a threshold value of said liquid crystal means and a frequency at least as large as the critical flicker fusion frequency of an eye, and means for controlling the duty cycle of said pulses to maintain the light passing through the lens at a predetermined luminous level.

4,279,475
METHOD OF CONTROL OF AN ELECTROLYTIC DISPLAY CELL AND A CIRCUIT FOR THE APPLICATION OF SAID METHOD

Gilles Delapierre, Seyssinet, and Robert Meyer, Saint Ismier, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Jun. 13, 1979, Ser. No. 48,180
Claims priority, application France, Jun. 19, 1978, 78 18222
Int. Cl.[3] G02F 1/29
U.S. Cl. 350—363 3 Claims

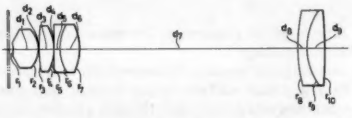


1. A display device comprising an electrolytic display cell provided therein with a plurality of transparent electrodes, a counter-electrode and an electrolytic solution containing a metal halide electrolyte, and a control circuit, said control circuit comprising first means for delivering any one of three currents:
(1) a writing current having a first direction to facilitate the deposition of a metallic film on the electrodes of the display cell;
(2) an erasure current having a second direction opposite to said first direction to facilitate disolving said metallic film; and
(3) a zero current to facilitate storage of the display;
and wherein said control circuit further comprises second means for delivering a leakage current at least when said zero current is delivered by said first means, said leakage current having a direction corresponding to said erasure current in said second direction.

4,279,476
OBJECTIVE LENS SYSTEM FOR MICROSCOPES

Ken-ichi Nakahashi, Hachiouji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Dec. 7, 1979, Ser. No. 101,187
Claims priority, application Japan, Dec. 11, 1978, 53/153295
Int. Cl.[3] G02B 9/34, 21/02
U.S. Cl. 350—414 10 Claims



1. An objective lens system for microscopes comprising a first negative meniscus lens component having a concave surface on the object side, a second positive lens component, a third positive cemented doublet lens component and a fourth positive cemented doublet lens component, and said lens system satisfying the conditions enumerated below:

$$0.5f \leqq d_1 \leqq 0.7f \quad (1)$$

$$1.5/f \leqq 1.4\left|\frac{n_1-1}{r_2}\right| \leqq \left|\frac{n_1-1}{r_1}\right| \leqq 3.0/f \quad (2)$$

$$1.9 \geqq n_1 \geqq 1.7 \quad (3)$$

$$55 \geqq \nu_1 \geqq 35 \quad (4)$$

$$1.8 \geqq n_2 \geqq 1.7 \quad (5)$$

$$96 \geqq \nu_4 \geqq 80 \quad (6)$$

$$5.0f \geqq d_7 \geqq 4.0f \quad (7)$$

$$190 \leqq 1.6(\nu_5+\nu_6) \leqq \nu_1+\nu_2+\nu_3+\nu_4 \quad (8)$$

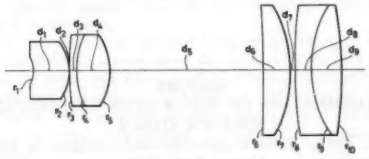
wherein the reference symbols r_1 and r_2 represent radii of curvature on the respective surfaces of the first lens component, the reference symbol d_1 designates thickness of the first lens component, the reference symbol d_7 denotes the airspace reserved between the third and fourth lens components, the reference symbols n_1 and n_2 designate refractive indices of the first and second lens components respectively, the reference symbols ν_1 through ν_6 denote Abbe's numbers of the respective lens elements and the reference symbol f represents focal length of the objective lens system as a whole.

4,279,477

OBJECTIVE LENS SYSTEM FOR MICROSCOPES

Tsutomu Tojo, Nagano, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Dec. 7, 1979, Ser. No. 101,188
Claims priority, application Japan, Dec. 11, 1978, 53/153296
Int. Cl.³ G02B *9/34, 21/02*
U.S. Cl. 350—414 **14 Claims**



1. An objective lens system for microscopes comprising a front lens group consisting of a first positive meniscus lens component and a second positive cemented doublet component, and a rear lens group consisting of a third lens component having positive refractive power and a fourth lens component having positive refractive power, and said lens system satisfying the following conditions:

$$0.5 < r_1/r_2 < 0.8 \quad (1)$$

$$0.3 < r_5/R < 1.1 \quad (2)$$

$$0.12f < d_1/n_1 < 0.19f \quad (3)$$

$$30 < [(\nu_2-\nu_3)+(\nu_p-\nu_n)] < 120 \quad (4)$$

$$0.35 < f_1/f_2 < 0.65 \quad (5)$$

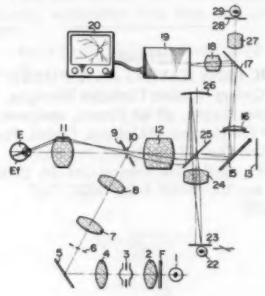
wherein the reference symbols r_1 and r_2 represents radii of curvature on both the surfaces of the first lens component, the reference symbol r_5 designates radius of curvature on the image side surface of the second lens component, the reference symbol R denotes radius of curvature on the image side surface of the third lens component, the reference symbol d_1 represents thickness of the first lens component, the reference symbol n_1 designates refractive index of the first lens component, the reference symbols ν_2 and ν_3 denote Abbe's numbers of both the elements respectively of the second lens component, the reference symbol ν_p and ν_n represent Abbe's numbers of the positive and negative lens elements respectively of the cemented doublet component arranged in the rear lens group, and the reference symbols f_1 and f_2 designate focal lengths of the front and rear lens groups respectively.

4,279,478

EYE EXAMINING INSTRUMENT

Isao Matsumura, Yokosuka, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 5, 1978, Ser. No. 948,885
Claims priority, application Japan, Oct. 5, 1977, 52-119697; Oct. 6, 1977, 52-120414
Int. Cl.³ A61B *3/10*; G03B *29/00*
U.S. Cl. 351—13 **30 Claims**



1. An eye examining instrument comprising:

a photographic system for photographing an eye fundus, including objective optical means adapted to be opposed to a human eye, photosensitive means and observation means;

an illuminating system for illuminating the eye fundus;

a first projection system for projecting a test mark onto a desired position on the eye fundus and for moving the same along a desired path on the eye fundus;

a fixation object for fixing the line of vision of the eye; and

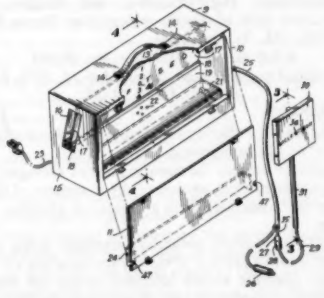
a second projection system for projecting an indicative mark onto said photosensitive means during photography, said second projection system being coupled to said first projection system.

4,279,479

VISION SCREENING KIT

Melvin Schrier, 111 Engle St., Tenafly, N.J. 07670

Filed May 29, 1980, Ser. No. 154,322
Int. Cl.³ A61B *3/02, 3/00*
U.S. Cl. 351—37 **7 Claims**



1. A portable vision screening kit comprising a carrying case having a removable front panel, said carrying case housing

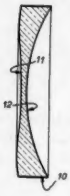
removable eye screening chart means slidably mounted on a pair of tracks for screening for distance visual acuity, means for illuminating said removable eye testing chart shielded from direct view, means for screening for distance phoria having means of illumination capable of providing a small light source, removable hand held means for screening for near phoria and near point vision having means of illumination capable of providing a small light source and means for screening for binocularity having means of illumination capable of providing a small light source and switch means to control the illumination for said means for screening for distance visual acuity, said means for screening for distance and near phoria and said means for screening for binocularity, and means for providing electrical energy to said switch means and means of illumination.

4,279,480

OPHTHALMIC LENS HAVING AN ASPHERIC SURFACE

Bruno Bettiol, Quincy-Voisins; Christian Harsigny, Yerres, and William Lenne, Gagny, all of France, assignors to Essilor International Cie Generale d'Optique, Creteil, France

Filed Oct. 22, 1979, Ser. No. 86,800
Claims priority, application France, Oct. 24, 1978, 78 30152
Int. Cl.³ G02B *3/04;* G02C *7/02*
U.S. Cl. 351—159 **5 Claims**



1. An ophthalmic lens having a front face which is a surface of revolution, and wherein with the optical axis of the lens being taken as the abscissa and an axis orthogonal to the optical axis being taken as the ordinate, the curve representing the half-meridian of the front face of the lens corresponds to the formula:

$$x=ay^2+by^3+cy^4+dy^5$$

wherein the coefficient a is a number other than zero and negative, the coefficient b is a number other than zero and positive, and coefficients c and d are numbers including zero.

4,279,481

INFORMATION DISPLAY ARRANGEMENT FOR CAMERA

Takao Ishibashi, Higashiyamato, and Kenjiro Osonoi, Tokorozawa, both of Japan, assignors to Osawa Precision Industries, Ltd., Tokyo, Japan

Filed May 17, 1979, Ser. No. 39,994
Claims priority, application Japan, May 22, 1978, 53-67845
Int. Cl.³ G03B *17/20*
U.S. Cl. 352—171 **11 Claims**

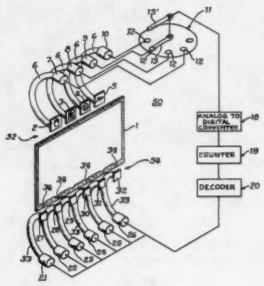
1. An information display arrangement for a viewfinder of a camera or the like comprising:

a plurality of camera function indicators arranged along a first predetermined portion of the perimeter of the viewfinder and associated with a respective plurality of functions;

a plurality of quantity indicators arranged along a second predetermined portion of the perimeter of the viewfinder;

manually operable switch selection means for selectively actuating a respective one of said function indicators in each of a plurality of switch positions;

quantity measurement means for generating an analog voltage for each of a plurality of functions corresponding to said function indicators, said analog voltage representing a predetermined quantity representation associated with each of said functions, said manually operable switch means including means for selectively connecting to a quantity signal output the respective one of said analog voltage quantity representations corresponding to the



function represented by the function indicator that is actuated by said manually operable switch means; and

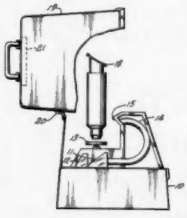
means responsive to said quantity signal output controlling said plurality of quantity indicators in a predetermined manner to represent said predetermined quantity representation corresponding to said actuated function.

4,279,482

ILLUMINATION OF REPLICAS OF BIOLOGICAL SURFACE TISSUE

Don R. Tyson, North Hollywood, Calif., assignor to Redken Laboratories, Inc., Canoga Park, Calif.

Continuation-in-part of Ser. No. 837,766, Sep. 29, 1977, abandoned. This application Feb. 2, 1979, Ser. No. 8,884
Int. Cl.³ G03B *21/06*
U.S. Cl. 353—65 **5 Claims**



1. A method for illuminating a replica of biological surface tissue lying on a platform by means of light from a coherent light source, the method comprising the steps of:

forming a replica of the biological surface tissue with negative topography in a piece of opaque molding material;

placing the replica on the platform;

directing coherent light onto the platform such that the light impinges upon the replica at an acute elevation angle to the surface of the replica;

viewing the replica; and

adjusting the azimuth angle from which the light impinges upon the replica while viewing the replica, until the replica appears with positive topography.

4,279,483

ELECTRO-OPTICAL CHARACTER GENERATOR FOR PHOTOCOMPOSING APPARATUS

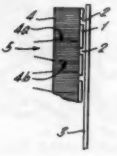
Charles J. England, Smallfield, and Brian A. Bakewell, South Croydon, both of England, assignors to The Monotype Corporation Limited, Salfords Redhill, England

Filed Mar. 18, 1980, Ser. No. 131,377

Claims priority, application United Kingdom, Mar. 21, 1979, 09955/79

Int. Cl.[3] B41G *13/00;* G03B *15/00, 27/00*

U.S. Cl. 354—5 3 Claims



1. In photocomposing apparatus in which a recording medium which is sensitive to radiation is movable relative to a head including means defining an array of light sources which are selectably operable to provide illumination of elementary areas of the medium and thereby to build up images of characters by a conglomeration of such areas, the improvement wherein said head comprises:

(a) a faceplate having opposite broad faces and disposed for traversal relative to said medium and in close proximity thereto, said faceplate being constituted by a multiplicity of parallel optical fibres disposed substantially normal to said broad faces;

(b) a mask having an ordered array of apertures, of which each aperture encompasses the adjacent ends of a multiplicity of the said fibres, said mask being disposed closely adjacent one of said broad faces of said faceplate; and

(c) means for selectively illuminating regions of the rear of said faceplate, said regions corresponding to said apertures.

4,279,484

APPARATUS FOR MEASURING A RANGE TO A SUBJECT

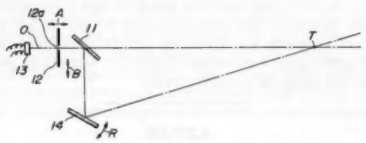
Tadashi Kimura, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Oct. 2, 1979, Ser. No. 81,090

Claims priority, application Japan, Oct. 5, 1978, 53/122868

Int. Cl.[3] G03B *13/20, 1/36*

U.S. Cl. 354—25 5 Claims



1. An apparatus for measuring a range to a subject comprising an optical system which includes a rotatable scanning mirror and defines a first optical path for forming a first stationary image of the subject and a second optical path for forming a second image of the subject, said second image being shifted with respect to the first stationary image by rotating said scanning mirror arranged in the second optical path; a photoelectric converting device for receiving said first and second images of the subject to produce a signal representing an in-focused condition when said first and second images coincide with each other; a pin hole member arranged in said first and second optical paths in front of said photoelectric converting device; and means for supporting said pin hole member and photoelectric converting device movable relative to each other in a direction parallel to an optical axis of the photoelectric converting device so as to change a size of a range measuring area with respect to a field of view.

4,279,485

ELECTROMAGNETIC DRIVE SYSTEM FOR PHOTOGRAPHIC SHUTTERS

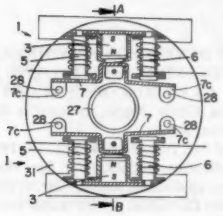
Martin Grünbacher, Braunfels, Fed. Rep. of Germany, assignor to Ernst Krull & Co., GmbH, Wetzlar-Nauborn, Fed. Rep. of Germany

Filed Jan. 3, 1980, Ser. No. 109,345

Claims priority, application Fed. Rep. of Germany, Jan. 4, 1979, 2900197

Int. Cl.[3] G03B *7/083;* H01F *7/14*

U.S. Cl. 354—51 6 Claims



1. An electromagnetic drive system for actuating the blades in the shutter of a photographic device to cover and uncover the shutter aperture, comprising

a—an aperture plate having a shutter aperture,

b—a first magnetically conductive base plate mounted on the aperture plate on one side of the shutter aperture,

c—a second magnetically conductive base plate mounted on the aperture plate on the side of the aperture opposite from the first base plate,

d—a first permanent magnet mounted on the the first base plate,

e—a first solenoid mounted on the first base plate on one side of the first permanent magnet,

f—a second solenoid mounted on the first base plate on the opposite side of the first permanent magnet, the coils of the first and the second solenoid being wound in an opposite sense so that the magnetic poles of the first and the second solenoid are opposite to one another,

e—a double armed lever pivotably supported adjacent one pole of the first permanent magnet so that a magnetic flux exists between the first double armed lever and the first permanent magnet, the lever being pivotable between a first end position and a second end position in either of which one lever arm rests against the core of one solenoid,

h—a first set of shutter blades for jointly covering and uncovering the shutter aperture, the first set comprising first and second shutter blades, the first blades being in driving engagement with the one lever arm, the second blades being in driving engagement with the other lever arm,

i—a second permanent magnet mounted on the second base plate,

j—a third solenoid mounted on the second base plate on one side of the second permanent magnet,

k—a fourth solenoid mounted on the second base plate on the opposite side of the second permanent magnet, the coils of the third and fourth solenoid being connected and being wound in an opposite sense so that the magnetic poles of the third and fourth solenoid are opposite to one another,

l—a second double armed lever pivotably supported adjacent one pole of the second permanent magnet so that a

magnetic flux exists between the second double armed lever and the second permanent magnet, the lever being pivotable between a first end position and a second end position in either of which one lever arm rests against the core of one solenoid,

m—an electric circuit connected to the coils of the first, second, third, and fourth solenoid for conducting a first pulse to the first and second solenoid at the beginning of the exposure and for conducting a second pulse to the third and fourth solenoid at the end of the exposure, whereby the shutter aperture is uncovered by the first shutter blades and covered by the second shutter blades, and

n—switch means for reversing the order of connection of the first and second solenoid and the third and fourth solenoid to the electric circuit after each exposure.

4,279,486

FILM TAKEUP DEVICE FOR AN ENDOSCOPE HAVING A CAMERA HOUSED IN A DISTAL END PORTION OF AN ENDOSCOPE SHEATH

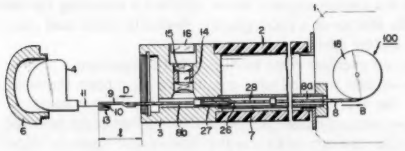
Mototugu Ogawa, Chofu, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 882,064, Feb. 28, 1978, abandoned. This application Oct. 29, 1979, Ser. No. 88,752

Claims priority, application Japan, Mar. 4, 1977, 52-26191[U]

Int. Cl.³ G03B *29/00;* A61B *1/06*

U.S. Cl. 354—62 **5 Claims**



1. In an endoscope including an operation section, an elongated sheath having two ends, one end being connected to the operation section, a distal end portion connected to the other end of the sheath and provided with a camera and a rolled elongated piece of film therein having two ends, a guide tube extending lengthwise through the sheath and having an inner diameter, and a film takeup device, said film takeup device comprising a takeup mechanism provided at the operation section and an operating wire section extending lengthwise through the guide tube, said operating wire section having two end portions, one end portion being connected to the takeup mechanism and the other end portion being connected to one of the ends of the film for feeding the film frame by frame, each time the takeup mechanism is operated, said operating wire section including a series of elongated closed wire loops each constituted by a wire with an outer diameter, linked one after another and disposed in the guide tube for shortening the length of the operating wire section as the operating wire section is moved towards the distal end portion so as to move the adjacent loops towards overlapping relationship and for lengthening the operating wire section when the end portion of the operating wire section connected to the film is pulled out of the distal end portion so as to move the adjacent loops away from overlapping relationship, each of said closed wire loops having such an elongated configuration extending along the guide tube that each of said loops has a length longer than its width, an outer crosswise width along the entire length of each of said loops smaller than the inner diameter of the guide tube and an inner crosswise width along the entire length of each of said loops larger than the outer diameter of the wire of the closed wire loop linked to said each of the closed wire loops.

4,279,487

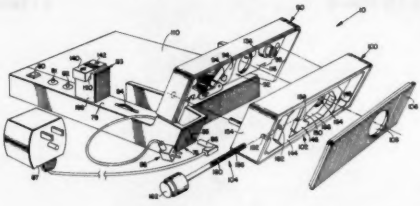
ADAPTER FOR COUPLING A CAMERA TO AN OPTICAL INSTRUMENT

Philip G. Baker, Peabody; John K. Fitch, Boston, and Henry T. Vance, Jr., Manchester, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Mar. 7, 1980, Ser. No. 128,140

Int. Cl.³ G03B *7/091, 17/52*

U.S. Cl. 354—79 **17 Claims**



1. An adapter for coupling a camera to an optical instrument in position to photograph an image provided by the instrument, the camera being of the type which upon actuation proceeds through an automatic cyle of operation including a film exposure phase that is automatically controlled within a predetermined range of exposure values by a light sensing circuit, formed in part by a camera mounted photocell, providing an exposure termination signal when a predetermined quantity of scene light has impinged upon the photocell following exposure initiation, said adapter comprising:

an adapter body for receiving and supporting such a camera thereon and including means for coupling said adapter body to the instrument so that the camera's objective lens is in position to receive image forming light transmitted along an optical path from the instrument;

means for blocking transmission of ambient and said image forming light to the camera photocell;

a light source operative upon energization for transmitting a sufficient quantity of light to the camera photocell for the light sensing circuit to provide the exposure termination signal;

means for measuring the intensity level of the image forming light and for providing a trigger signal at the end of an interval that is proportional to the measured intensity level;

means for storing the measured light intensity data; and

control means responsive to said trigger signal when provided within a predetermined range of timed intervals that corresponds to said predetermined range of exposure values for actuating said camera and responsive to said storing means for thereafter energizing said light source at a time following exposure initiation that is proportional to the measured intensity level, said control means also including means for inhibiting camera actuation when said trigger signal is provided at times not within said predetermined range of timed intervals.

4,279,488

CAMERA WITH FLASH THROUGH VIEWFINDER

Stephen P. Hines, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 12, 1980, Ser. No. 158,749

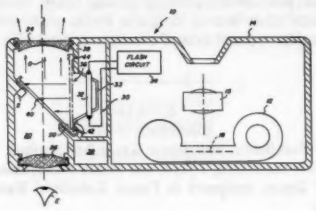
Int. Cl.³ G03B *15/03, 13/02*

U.S. Cl. 354—145 **14 Claims**

1. In a photographic camera including a housing, a view finder through which objects to be photographed are viewable along an optical path by the camera user, the viewfinder optical path being separate from the optical path of the taking lens of the camera, and a flash unit including a selectively energizable flashlamp for illuminating such objects, the improvement comprising:

(a) means for mounting the flashlamp in the interior of the camera housing; and

(b) means for selectively directing light from the flashlamp, when energized, through the viewfinder and along said viewfinder optical path toward such objects to be photographed, said light-directing means comprising a light-



reflective element and means for mounting said reflective element to said housing for movement between a first position displaced from the optical path of the viewfinder, and a second position intersecting said path, whereby light from the flashlamp is reflected by said element into object space when said element is in said second position.

4,279,489

INTERCHANGEABLE EYE PIECE-HOUSING

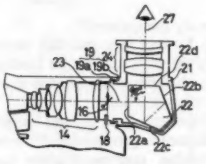
Tetsuji Shono; Kazuo Goto, both of Kawagoe, and Michiro Ohishi, Tokyo, all of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 27, 1979, Ser. No. 34,037

Claims priority, application Japan, Apr. 28, 1978, 53-52069

Int. Cl.³ G03B *13/08, 19/12*

U.S. Cl. 354—155 **9 Claims**



1. In a single lens reflex camera having a first focus surface, prism means, a Keplerian telescope type eye level finder optical system having a second focus surface and means for displaying data in a view finder, said display means provided on said second focus surface of said optical system and an interchangeable eye piece housing, the improvement comprising, a mount device having a camera side mount and an eye piece side mount provided between said second focus surface and an eye piece of said optical system, and an eye level eye piece housing and a waist level eye piece housing each having an eye piece side mount interchangeably mounted on said camera side mount.

4,279,490

ELECTRIC DRIVING DEVICE

Yukio Mashimo, Kawasaki; Tomonori Iwashita, Fuchu, and Hidehiko Fukahori, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 9, 1979, Ser. No. 82,461

Claims priority, application Japan, Oct. 11, 1978, 53-125472

Int. Cl.³ G03B *1/00*

U.S. Cl. 354—173 **2 Claims**

1. An electric driving device for performing winding and rewinding operations in a camera, which comprises:

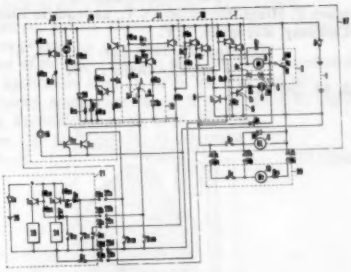
a first semi-conductor switching element which becomes conductive at the time of a winding operation:

a second semi-conductor switching element which becomes conductive at the time of a rewinding operation;

said first and second switching elements being connected to form a series circuit to be connected between both poles of a power source;

a changeover switch having two fixed terminals to be connected to respective poles of the power source;

a motor with one end connected to a central point of the series circuit with another end connected to a movable terminal of the changeover switch;



first and a second motor driving circuits formed by the changeover switch and the first and second switching elements;

said first driving circuit effecting normal rotation of the motor to perform the winding operation;

said second driving circuit braking the motor at the time of stoppage of the winding operation, and effecting reverse rotation of the motor to perform the rewinding operation; and

said first driving circuit being arranged for braking the motor at the time of stoppage of the rewinding operation.

4,279,491

APPARATUS FOR EXPOSING AND DEVELOPING FILM UNITS OR THE LIKE

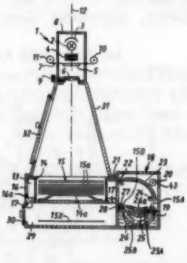
Otto Stemme, Munich; Berthold Fergg; Viktor Osegowitsch, both of Taufkirchen, and Wolfgang Viehrig, Munich, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Filed Nov. 23, 1979, Ser. No. 96,742

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1978, 2851892

Int. Cl.³ G03B *27/32, 27/52*

U.S. Cl. 355—27 **12 Claims**



1. In an apparatus for exposing and developing photosensitive material including discrete units which must be subjected to a diffusion treatment upon completion of a developing treatment, such as film units having a plurality of overlapping

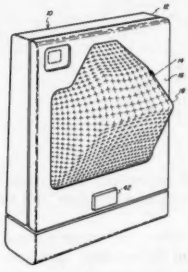
sheets, the combination of an exposing unit; means for supporting photosensitive material in a predetermined position with respect to said exposing unit; a developing unit adjacent to said supporting means; and a diffusion chamber below said supporting means, said developing unit having means for transporting exposed photosensitive material from said supporting means into said chamber and said transporting means including means for reversing the direction of movement of photosensitive material during transport of such material from said supporting means into said chamber.

4,279,492

PLANAR BELLOWS

Stephen P. Hines, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 23, 1980, Ser. No. 161,707
Int. Cl.³ G03B *17/04*
U.S. Cl. 354—187 **3 Claims**



1. In a camera of the type having a housing with an opening, means for supporting camera optics for movement between a position substantially within said housing and a position protruding substantially through said opening in said housing, and a bellows covering said opening and defining a light-tight closure for said camera, an improved bellows comprising:

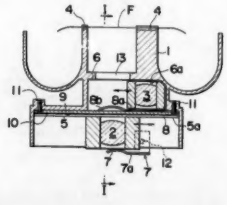
a flat sheet of resilient, opaque material extending over said opening and fastened around its periphery to said housing, said sheet being extendable within its elastic limit to define a tent-like configuration when said supporting structure is in said protruding position and contractible by its own restoring forces to a substantially flat plane when said optics supporting structure is collapsed.

4,279,493

CAMERA STRUCTURE

Haruo Kobayashi, Toyokawa, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Aug. 10, 1979, Ser. No. 129,977
Claims priority, application Japan, Dec. 13, 1977, 52-168075[U]
Int. Cl.³ G03B *3/00*
U.S. Cl. 354—197 **9 Claims**



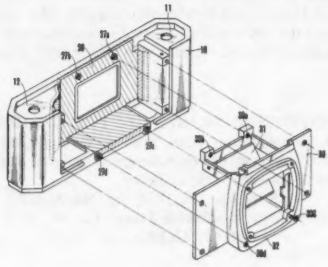
1. In a camera which has incorporated therein two kinds of photographic lenses which are selectively settable to an operative position and a retired position thereof, the camera structure characterized by comprising a camera body integrally molded to be formed with a film position-determining plane, a first lens position-determining plane with which the rear end of the first photographic lens unit is in contact, and a second lens position-determining plane with which the rear end of the second photographic lens unit is in contact, said first and second lens position-determining planes being formed parallel with each other and at different levels with respect to the photographic optical axis of the camera, and both facing forward.

4,279,494

CAMERA BODY

Ryoichi Yoshikawa, Yokohama; Kazuhiko Okajima, Fukushima; Shunichi Nakahara, Tokyo, and Sumio Nakayama, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 26, 1979, Ser. No. 97,834
Claims priority, application Japan, Nov. 25, 1978, 53-145536
Int. Cl.³ G03B *17/02*
U.S. Cl. 354—288 **6 Claims**



1. A camera body comprising:

a plastic body formed in a molding operation including a central body portion, and a film loading chamber and a film windup chamber each located at an opposite end of said central body portion;

a metal plate located in said central body portion and fixed thereat in the molding operation for reinforcing said central body portion, said metal plate having at least one portion for interengaging said plate with said molded plastic body, said metal plate being of a thickness substantially equal to that of said central body portion, said metal plate being exposed on an exterior surface of said camera body so that an exposed seam is formed between said metal plate and said molded plastic body; and

at least one projection formed along said connecting portion for interengagement with said molded plastic body, said projection being arranged to contact a forming mold surface in response to pressure applied to said projection when said camera body is molded to prevent seepage of the molten plastic between said metal plate and the forming mold surface thereby preventing formation of plastic flash.

4,279,495

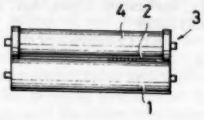
PHOTOSENSITIVE MATERIAL PROCESSING APPARATUS

Osamu Fukushima, and Atsushi Shiraishi, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Mar. 21, 1980, Ser. No. 132,610
Claims priority, application Japan, Apr. 2, 1979, 54-39499
Int. Cl.³ G03D *3/13*
U.S. Cl. 354—321 **8 Claims**

1. An apparatus for processing a material in the form of a

sheet or a web: comprising pairs of rollers arranged at short intervals for conveying said material through successive order processing sections, the rotational speeds and diameters of said rollers having values resulting in web conveyance speeds of said pairs of rollers which are greater for roller pairs in the downstream processing sections than in the upstream processing sections, said roller pairs also being arranged to provide a distance between the rollers of a given pair, even in the absence of a web or sheet, which distance is sufficiently small to result



in a frictional force on said web or sheet when passing through said roller pairs, while at the same time permitting slippage of the web or sheet relative to the conveyance speed of any pair of rollers, the increasing conveyance speed providing tension on said web or sheet and the distance between rollers of a given pair providing sufficient slippage to insure that the said tension does not exceed the strength of the web and to permit correction of meandering by a correcting force which overcomes the frictional force between the web and the rollers.

4,279,496

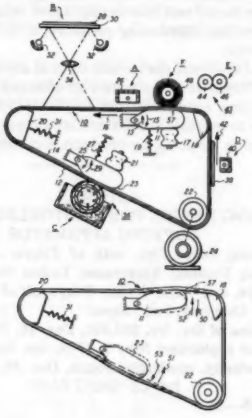
BELT SUPPORT SYSTEM

Morton Silverberg, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 21, 1979, Ser. No. 41,049

Int. Cl.[3] G03G *15/00*

U.S. Cl. 355—3 BE **9 Claims**



1. An apparatus for removably supporting a belt, including:

means mounted fixedly for supporting the belt and maintaining at least a portion thereof generally planar in an inoperative position;

means, mounted movably, for deflecting the planar portion of the belt to an operative position; and

means, coupled to said movable mounting means, for moving said movable mounting means to deflect the belt to the operative position and to return the belt to the inoperative position facilitating removal of the belt from said fixed mounting means and said movable mounting means and the replacement thereof with an unused belt, said moving means includes pneumatic means in communication with said movable mounting means, said pneumatic means includes a bellows coupled to said movable mounting means, and means for supplying a pressurized fluid to said bellows expanding said bellows to move said movable mounting means and the belt to the operative position, said fixed mounting means includes a post defining an interior chamber in communication with said supplying means and having a plurality of apertures in the periphery thereof through which pressurized fluid flows to form a fluid film between said post and the portion of the belt passing thereover.

4,279,497

ELECTROSTATIC COPYING MACHINE

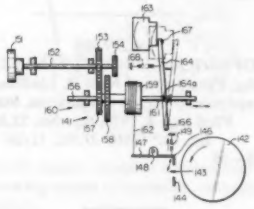
Toyokazu Satomi, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 795,610, May 10, 1977, abandoned. This application Dec. 27, 1979, Ser. No. 108,187

Claims priority, application Japan, May 18, 1976, 51/56999; Jun. 2, 1976, 51/64319; Jun. 19, 1976, 51/72601

Int. Cl.[3] G03G *15/28, 15/32;* G03B *27/34*

U.S. Cl. 355—8 **33 Claims**



1. An electrostatic copying machine comprising:

a rotary photoconductive member;

a fixed aperture plate disposed adjacent to the photoconductive member;

a movable aperture plate disposed adjacent to the fixed aperture plate and being formed with a curved edge, the fixed and movable aperture plates defining an aperture therebetween;

a variable magnification optical means for focussing an image of a portion of an original document through the aperture onto the photoconductive member;

the optical means being constructed so that an image of a leading edge of the document in a direction of scanning is focussed through the aperture at an initiation of scanning at all magnifications;

the optical means being connected to the movable aperture plate in such a manner as to axially position the movable aperture plate so that a center of the curved edge aligns with a center of the image at all magnifications.

4,279,498

ELECTROSTATOGRAPHIC COPYING APPARATUS WITH AUTOMATIC TONER DENSITY CONTROL

Tadahiro Eda; Susumu Tatsumi; Chikara Imai, and Yasushi Koichi, all of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Dec. 14, 1979, Ser. No. 103,825

Claims priority, application Japan, Dec. 28, 1978, 53-161704; Jun. 27, 1979, 54-81091

Int. Cl.[3] G03G *15/00*

U.S. Cl. 355—14 D **19 Claims**

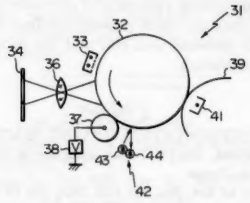
1. An electrostatographic apparatus including a photoconductive member, imaging means for forming an electrostatic image on the member and developing means for developing the electrostatic image to form a toner image, characterized by comprising:

first sensor means for sensing a density of the toner image;

second sensor means for sensing a variable operating parameter of at least one of the imaging means and the developing means;

control means for controlling the developing means to increase a toner density when said density is below a reference value; and

computing means for compensating the control means as a predetermined function of the sensed operating parameter.

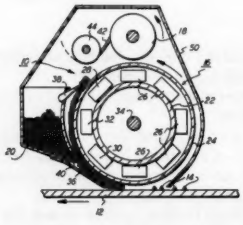


4,279,499

ELECTROPHOTOGRAPHIC CLEANING APPARATUS

Ivan Rezanka, Pittsford, and Nero R. Lindblad, Palmyra, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 4, 1979, Ser. No. 72,263
Int. Cl.³ G03G *21/00, 15/00*
U.S. Cl. 355—15 **3 Claims**



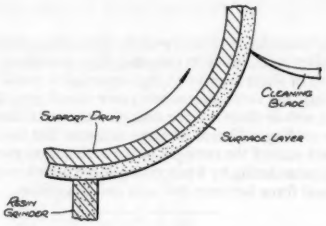
1. A magnetic brush apparatus for cleaning the photoreceptor in an electrostatographic copying machine comprising a magnetic brush roll positioned at an elevated location from the area of the photoreceptor to be cleaned by the brush, a plurality of magnet means located inside said magnetic brush roll, a reservoir for carrier particles, pickoff means for removing a part of the carrier particles from said magnetic brush roll into said reservoir during rotation of said magnetic brush roll, and exit means at the lower end of said reservoir, whereby said reservoir, said pickoff means, said exit means and said magnet means cooperate during the operation of the apparatus to circulate the carrier particles between the magnetic brush roll and the reservoir so that a portion of the magnetic brush on the roll is continuously removed and reformed, said magnetic brush roll comprises an inner stationary support and an outer roll mounted for rotation, said magnet means being fixedly mounted on said inner support and said outer roll being concentric to said inner support so that magnetic brush formed of carrier particles is supported on the exterior cylindrical surface of the outer roll, said magnet means includes a first magnet means positioned near said pickoff means to assist in the partial removal of the magnetic brush during the operation of the apparatus, a second magnet means positioned near said exit means to assist in the reformation of the magnetic brush during the operation of the apparatus, and a third magnet means positioned between said first and second magnet means, said second and third magnet means include magnetic field shunting means to prevent the magnetic fields from said second and third magnet means for interfering with the flow of the carrier particles in said reservoir.

4,279,500

ELECTROPHOTOGRAPHIC APPARATUS AND AN ABRADING MEANS

Hideyo Kondo, Toride, and Keiichi Murai, Abiko, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 27, 1979, Ser. No. 34,208
Claims priority, application Japan, Apr. 27, 1978, 53-50626; Oct. 14, 1978, 53-126699
Int. Cl.³ G03G *21/00*
U.S. Cl. 355—15 **14 Claims**



1. In an electrophotographic apparatus which comprises an image holding member for electrostatic images and/or toner images having a surface layer subject to residual toner build-up and/or corona ion-induced electrical deterioration byproducts which reduce image quality and inhibit toner removal after image transfer, the improvement comprising:

(a) a solid particulate lubricating agent contained in the surface layer, said lubricating agent being capable of increasing the lubricating property of the surface of said layer and;

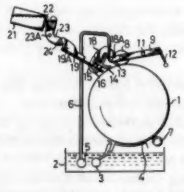
(b) means to abrade the surface layer to expose a new surface of said layer and to maintain an effective exposure of said lubricating agent, wherein said lubricating agent is consumed to increase the lubricating property of the surface and aid in reducing by-products and toner build-up.

4,279,501

CLEANING DEVICE FOR PHOTOELECTROSTATIC COPYING APPARATUS

Kenji Kojima; Sakae Ota, both of Tokyo; Akio Katsumata, Chigasaki; Toshiaki Kameyama; Toshio Watanabe, both of Yokohama, and Tadao Koike, Tokyo, all of Japan, assignors to Ricoh Company, Ltd., Japan

Continuation of Ser. No. 861,401, Dec. 16, 1977, abandoned.
This application May 7, 1979, Ser. No. 36,736
Claims priority, application Japan, Dec. 29, 1976, 51-160155
Int. Cl.³ G03G *21/00*
U.S. Cl. 355—15 **4 Claims**



1. An improved cleaning device for photoelectrostatic copying apparatus of the type having a rotatable drum having a photosensitive curved peripheral surface, means for delivering liquid developer to the surface for developing an image which

may be thereon to make a copy on a copy sheet, and a cleaning blade and a cleaning roller adapted to be brought into pressing engagement with the drum immediately after a visible image has been printed thereon on a copy sheet comprising, in combination, a support, a roller support lever pivotally mounted on said support, the cleaning roller being rotatably mounted on said support lever and engageable with said drum, spring means acting on said support lever to bias said support lever and the cleaning roller in a direction away from the drum, a support shaft rotatably mounted on said support alongside said roller support lever, a pressure lever on said support shaft having a portion acting on said support lever to urge it in a direction against the bias of said spring means to cause said support lever to be moved into engagement with the drum, the cleaning blade being connected to said shaft and engageable on the drum with the cleaning roller in an operative cleaning position in contact with the drum responsive to the operation of the photoelectrostatic apparatus after the visible image has been transferred therefrom to make a copy, actuating means having a driven member selectively acting on said shaft for maintaining contact of the cleaning blade and cleaning roller on the drum for cleaning responsive to the operation of the apparatus after the visible image has been transferred therefrom to make a copy and permitting said support shaft to rotate in a direction to lift the cleaning blade out of contact with the drum by the bias of said spring means and to position the cleaning blade out of contact with the drum and to position the cleaning roller in one of a position out of contact with the drum and a position in which its contact pressure with the drum is reduced when the apparatus is not operating.

4,279,502

METHOD OF AND APPARATUS FOR DETERMINING THE COPYING LIGHT AMOUNTS FOR COPYING FROM COLOR ORIGINALS

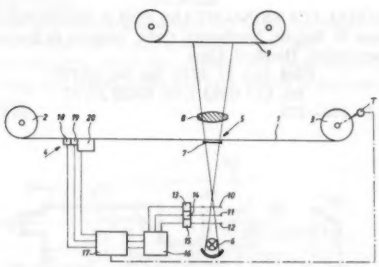
Siegfried Thurm, Voiswinkel; Konrad Bunge, Cologne, and Günter Findeis, Sauerlach, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Filed Sep. 11, 1979, Ser. No. 74,331

Claims priority, application Fed. Rep. of Germany, Sep. 15, 1978, 2840287; Mar. 20, 1979, 2912130

Int. Cl.³ G03B *27/73*

U.S. Cl. 355—38 **34 Claims**



32. An apparatus for determining the individually controllable amounts of light in various colors to which photographic copying material is to be exposed at a copying station in a color copying operation from a length of photographic original material including a series of discrete image-carrying sections, especially from a film strip including a series of color negatives, comprising means arranged upstream of the copying station by a distance at least matching the length of the original material and operative for measuring the density of the original material in three basic colors at a plurality of regions of the original material and for generating signals corresponding to the measured density values; and means for evaluating said signals for use in influencing the light amount control in the copying station, said evaluating means being operative to form functional correlations of differences between the signals corresponding to different ones of the basic colors and average densities based on the measurement of a number of the regions and to determine the amounts of light in the basic colors to which the original material is to be exposed when making a copy from a particular section of the respective length of the original material.

4,279,503

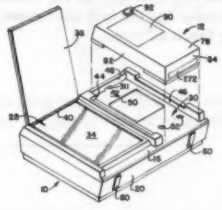
MICROFICHE SYSTEM

Vincent L. Cocco, Wakefield; Philip R. Norris, North Reading, and Richard R. Wareham, Marblehead, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Sep. 4, 1979, Ser. No. 71,939

Int. Cl.³ G03B *13/28*

U.S. Cl. 355—45 **13 Claims**



1. A microfiche system operable alternatively in image recording and viewing modes of operation, said system comprising in combination:

a console having a combination document mounting and image display area, a camera/projector mount and reflective means for transmitting an image between said mounting and display area and said mount;

a camera adapted to be releasably mounted in said mount, thereby rendering said system operational in said image recording mode, for exposing a pattern of images of a plurality of documents supported successively on said mounting and display area so as to provide a corresponding plurality of image transparency frames on each such film unit; and

a projector adapted to be releasably mounted in said mount in place of said camera for converting said system from said image recording to said viewing mode of operation, said projector having means for supporting a film unit provided with said image transparency frames, an energizable light source, and means for projecting an enlarged light image of each of said image transparency frames to said mounting and display area via said reflective means.

4,279,504

COPIER AND MULTIFUNCTION PAPER CASSETTE

Leon C. Brown; Uscoe J. Fitts, both of Boulder, and David R. Polakowski, Longmont, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 26, 1979, Ser. No. 107,000

Int. Cl.³ G03B *27/58*

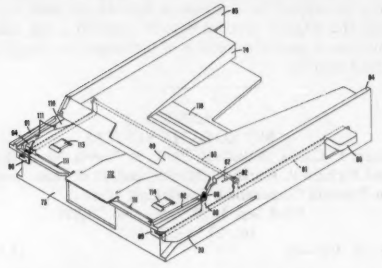
U.S. Cl. 355—72 **30 Claims**

1. A cassette for use with a sheet feed mechanism of a copier or the like to provide sheet supply storage, bypass sheet feeding and output copy tray functions, comprising:

a frame having upper and lower spaced walls forming a chamber for storing a stack of supply sheets and including an opening at one end of said upper wall for permitting serial extraction of sheets from said chamber by the feed mechanism; and

means forming a tray on said upper wall external to said chamber, including gate means positioned at the edge of said tray nearest said frame opening, said gate means being

movable between a first closed position for retaining sheets in said tray, as said output tray function, and a second open position for allowing a sheet to be moved



from said tray into interleaving relation between sheets in said chamber and the feed mechanism, as said bypass sheet feeding function.

4,279,505

METHOD FOR PRINT EXPOSURE CONTROL

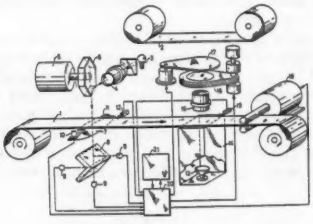
Karl Ursprung, Niederhasli, and Franz Zimmermann, Meggen, both of Switzerland, assignors to Gretag Aktiengesellschaft, Regensdorf, Switzerland

Filed Oct. 17, 1979, Ser. No. 85,736

Claims priority, application Switzerland, Oct. 20, 1978, 10875/78

Int. Cl.³ G03B *27/73*

U.S. Cl. 355—77 **22 Claims**



1. A method of modulating the exposure of photographic copies where the original to be copied is scanned point by point photoelectrically, wherein there is determined the neutral density of each point of the image, and a basic density correction term is derived from the individual density values in order to modulate the overall density of the copy to be prepared, comprising the steps of electronically comparing the density values of image points of the original to be copied with a threshold value in order to determine whether the original to be copied contains areas which extend to at least one of its margins and which contain image points with a density above the threshold value, reducing the density values of at least a portion of the image points associated with such areas, and substituting the reduced density values for the original ones for at least a portion of the processing steps leading to the basic density correction term.

4,279,506

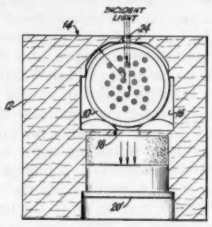
PHOTOMETRIC APPARATUS AND METHODS FOR COUNTING THE PARTICULATE COMPONENTS OF BLOOD

Robert Q. Maines, Tappan, N.Y., assignor to R. J. Harvey Instruments Corp., Hillsdale, N.J.

Continuation of Ser. No. 848,272, Nov. 3, 1977, abandoned. This application Sep. 17, 1979, Ser. No. 76,222

Int. Cl.³ G01N *21/64, 33/48*

U.S. Cl. 356—39 **7 Claims**



1. Photometric apparatus for determining particulate concentration in whole blood suspended in a liquid solution, said particulate having a visible radiation response to interactive radiation, the apparatus comprising, a transparent envelope for containment of a liquid solution having suspended therein particulate components of blood, a body having an internal cavity of sufficient size so as to surround and support said envelope, said body containing a relatively restrictive passage communication between the internal cavity of said body and the exterior surface of said body, said body having the characteristic of absorbing radiation at the wavelength of the visible radiation, and means positioned to intercept the visible radiation via said restrictive passage for detecting at least a portion of the radiation spectrum at the wavelength of the visible radiation, and for indicating particulate concentration in response thereto, said body being comprised of Nylon IV dyed to render said body absorbent of radiation across the entire visible and ultra-violet spectrum.

4,279,507

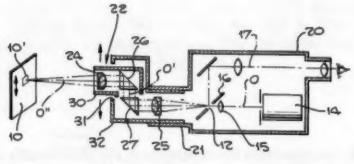
SPATIAL SCANNING MEANS FOR A PHOTOMETER

Thomas H. Bulpitt, Northridge, Calif., assignor to Kollmorgen Corporation, Hartford, Conn.

Filed Aug. 27, 1979, Ser. No. 69,779

Int. Cl.³ G01J *1/04;* G02B *27/17*

U.S. Cl. 356—225 **10 Claims**



7. In combination with a radiant energy measuring meter having a measuring aperture, the provision of:

an optical scanning system comprising

laterally and longitudinally spaced first and second lens means;

a pair of prisms between said first and second lens means for folding the optical axes of both lens means along a coincident laterally extending optical axis portion between said prisms;

one of said lens means being a collimating lens whereby

collimated light is transmitted along said optical axis portion between said prisms,

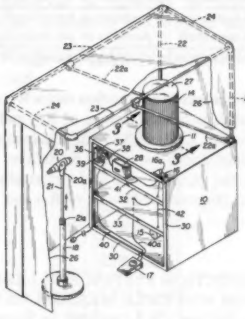
and means for mounting said one of said lens means and its associated prism for movement relative to the lateral optical axis portion.

4,279,508

METHOD AND APPARATUS FOR TESTING AIR FILTERS AND THE LIKE

Herbert L. Everroad, 9398 Fallen Rock Rd., Conifer, Colo. 80033

Filed Jun. 29, 1979, Ser. No. 53,272
Int. Cl.³ G01N *21/88*
U.S. Cl. 356—237 **13 Claims**



7. An apparatus for testing air filters and the like to locate holes therein which comprises:

rotatable means for supporting a cylindrical air filter to be tested in an upright position and for rotation about its central axis,

a light source,

means for supporting said light source for movement along the central axis of said rotatable means, and

motor-actuated means for moving said supporting means along said axis to locate said light source in selected positions.

4,279,509

ZERO VOLUME FLOW CELL

George M. Daffern, Sunnyvale, Calif., assignor to Syva Company, Palo Alto, Calif.

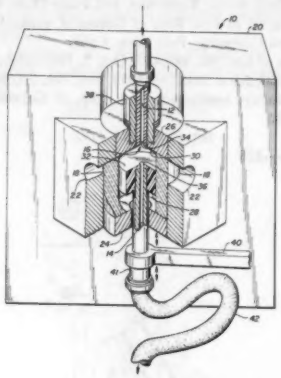
Filed Dec. 5, 1979, Ser. No. 100,587
Int. Cl.³ G01N *21/05, 21/13*
U.S. Cl. 356—246 **10 Claims**

1. A flow cell apparatus having a fluid flow path through an enclosed optical viewing region having optical viewing windows, said flow cell comprising:

first fluid access means to said viewing region;

second fluid access means to said viewing region; and

means having a conduit therethrough and movable within said viewing region for collapsing said viewing region to substantially zero volume while maintaining said fluid flow path between said first fluid access means and said second fluid access means such that said collapsing means



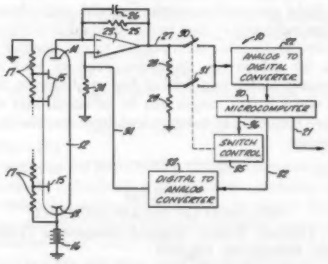
can clear said viewing region of fluid and said flow path can be flushed by a minimal volume of a cleaning fluid.

4,279,510

SPECTROPHOTOMETER WITH IMPROVED PHOTOMULTIPLIER TUBE DARK SIGNAL COMPENSATION

James R. Brown, Garden Grove, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Oct. 19, 1979, Ser. No. 86,389
Int. Cl.³ G01J *3/00*
U.S. Cl. 356—319 **8 Claims**



1. In a spectrophotometer including a source of light, a detector responsive to said light for producing an analog signal proportional to the intensity thereof, an analog-to-digital converter, a signal path from said photomultiplier tube to said converter, said converter producing a digital signal as a function of said analog signal, and calculator means responsive to said digital signal for generating a signal for compensating for the dark current of said photomultiplier tube, the improvement comprising:

means for increasing the gain of said signal path by a factor of n during calculation of the value of said compensating signal.

4,279,511
PHOTOMETRIC ABSORPTION DETECTOR

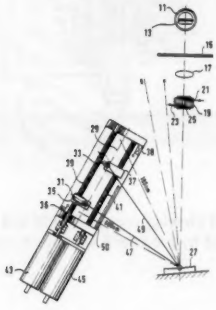
Alfred Maute, Holzgerlingen; Konrad Teitz, Pfinztal-Berghausen; Klaus Baier, Karlsruhe, and Hans Heid, Bammental-Heidelberg, all of Fed. Rep. of Germany, assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 840,437, Oct. 7, 1977, abandoned. This application Mar. 30, 1979, Ser. No. 25,688

Claims priority, application Fed. Rep. of Germany, Nov. 6, 1976, 2651086

Int. Cl.³ G01J *3/42*

U.S. Cl. 356—328 **3 Claims**



1. A photometric absorption detector comprising:

a light source including a first diaphragm for emitting a light beam from the diaphragm;

a test cell disposed in the light beam and having a bore for receiving a sample of material;

a lens disposed in the light beam between said light source and said test cell for forming a scaled-down image of said first diaphragm in the bore of said test cell, said image being spaced apart from the interior walls of said bore;

means for spectroscopically dispersing the light emerging from the test cell;

a second diaphragm disposed in the light beam between said light source and said lens for forming an image of said second diaphragm on said dispersing means;

photodetector means in the field of the dispersed light for detecting the absorption of certain wave length ranges of the light due to the sample material, said photodetector means including at least two individual detectors independently displaceable with respect to one another; and

means for selectively displacing each of said individual detectors within said field of dispersed light so that different wave length ranges can be detected, said displacing means including an independent drive mechanism for each detector.

4,279,512
METHOD OF MEASUREMENT

David F. Tunstall, Redcar, England, assignor to Tioxide Group Limited, Billingham, England

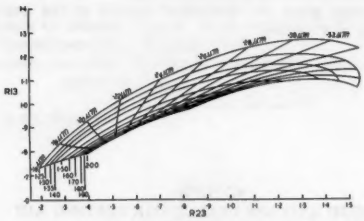
Filed Feb. 25, 1980, Ser. No. 124,331

Claims priority, application United Kingdom, Mar. 21, 1979, 09917/79

Int. Cl.³ G01N *15/02*

U.S. Cl. 356—335 **17 Claims**

1. A method of measuring the mean particle size and/or standard deviation of particles which comprises forming a suspension of said particles in a continuous medium wherein the ratio of refractive index of the particles to that of the medium is at least 1.50, illuminating a portion of the suspension with beams of radiation of wavelengths R_1, R_2 and R_3 and measuring the amounts of non-scattered radiation passing through the suspension, illuminating a portion of the continuous medium free of said particles with beams of radiation having respectively wavelengths of R_1, R_2 and R_3 and measuring the amounts of non-scattered radiation passing through the



portion of continuous medium for each wavelength, from the measurements so made obtaining the attenuation ratios R_{13} and R_{23} according to the formulae:

$$R_{13} = \frac{\text{Attenuation by particles at wavelength } R_1}{\text{Attenuation by particles at wavelength } R_3}$$

$$R_{23} = \frac{\text{Attenuation by particles at wavelength } R_2}{\text{Attenuation by particles at wavelength } R_3}$$

comparing the so measured attenuation ratios R_{13} and R_{23} with a set of previously calculated values of R_{13} and R_{23} for the particular continuous medium and for a selection of chosen mean particle sizes and/or standard deviations and thereby obtaining the mean particle size and/or standard deviation corresponding to the measured value of R_{13} and R_{23}.

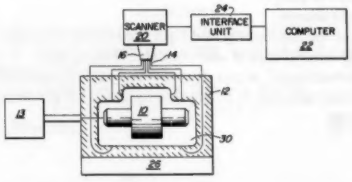
4,279,513
OPTICAL INSPECTION SYSTEM FOR LARGE PARTS AND FOR MULTIPLE MEASUREMENTS

Billy J. Tucker, Skillman, N.J., assignor to Sangamo Weston, Inc., Atlanta, Ga.

Filed Apr. 2, 1979, Ser. No. 25,827

Int. Cl.³ G01B *11/02, 11/00*

U.S. Cl. 356—387 **14 Claims**



1. An optoelectronic system for simultaneously measuring dimensions in at least two planes of a three dimensional workpiece comprising:

a mount for receiving and orienting said workpiece;

a plurality of fiber optic bundles each having an object end positioned proximate to selected areas of said workpiece, said object ends of said bundles being held in a fixed position relative to each other in said mount, wherein each fiber optic bundle forms a separate image of a selected edge of said workpiece;

a scanner having a light sensitive photocathode optically coupled to receive the plurality of separate images formed by said fiber optic bundles, said bundles forming a collective image of said separate workpiece edge images in a fixed position on the photocathode of said scanner, said scanner being arranged to scan only those areas of said photocathode upon which said collective image is formed and to generate electrical signals corresponding to de-

tected positions of said images of said workpiece edges; and

a processor receiving said electrical signals for determining selected measurements of said workpiece from said detected positions of the images of said workpiece edges.

4,279,514

APPARATUS FOR THE ANALYSIS OF TEST TAPE

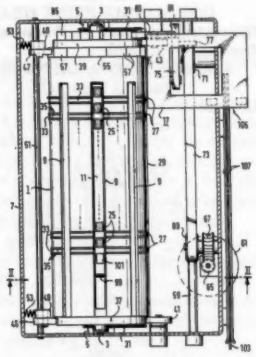
Reinhard Blümel; Jürgen Denker; Ernst Markart; Werner Trapp; Michael Tutzer, and Reinhard Woznik, all of Munich, Fed. Rep. of Germany, assignors to Labora Mannheim GmbH für Labortechnik, Mannheim, Fed. Rep. of Germany

Filed Jan. 16, 1979, Ser. No. 3,857

Claims priority, application Fed. Rep. of Germany, Jan. 30, 1978, 2803849

Int. Cl.³ G01N *21/55, 21/00*

U.S. Cl. 356—445 **36 Claims**



1. Apparatus for analyzing test tapes having test areas arranged adjacent each other therealong, particularly suited for urinalysis comprising: tape carrier means including at least one drum mounted for rotation about an axis; receptacle means defined on said drum for receiving and holding therein test tapes to be analyzed, said receptacle means comprising a plurality of longitudinal receptacles angularly spaced apart in the direction of rotation of said drum; measuring means for sensing said test areas of said test tape and for deriving therefrom analytical data, said measuring means including light source means and means for sensing light reflecting characteristics of said test areas; drive means for moving said measuring means longitudinally along said drum generally parallel to said axis to effect scanning of test tapes contained in said receptacles by said measuring means; guide means for effecting guided movement of said measuring means relative to said tape carrier means along said receptacles; and indexing means for effecting stepped rotation of said drum to individually bring test tapes contained in said receptacles into registry with said measuring means to enable scanning of said tapes by said measuring means; and indexing means including means in driven engagement with said drive means arranged to periodically effect said stepped rotation of said drum in accordance with a predetermined scanning cycle of said test tapes by said measuring means.

4,279,515

EXTRUDER WITH EXCHANGEABLE HOUSING INSERT

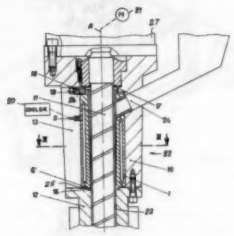
Alfred Effenberger, Leinfelden-Echterdingen, and Hermann Staehle, Stuttgart, both of Fed. Rep. of Germany, assignors to Staehle Maschinenbau GmbH, Leinfelden-Echterdingen, Fed. Rep. of Germany

Filed Jun. 11, 1979, Ser. No. 47,777

Claims priority, application Fed. Rep. of Germany, Jun. 13, 1978, 2825825

Int. Cl.³ B29B *1/06*

U.S. Cl. 366—76 **10 Claims**



1. An extruder comprising:

a housing extending along an axis and having integral upstream and downstream housing portions, said housing formed at said downstream housing portion with a radially closed downstream bore portion centered on said axis and at said upstream housing portion upstream from said downstream portions with a recess opening only in one radial direction from said axis and communicating with said downstream bore portion;

an insert snugly receivable in said recess, said insert being formed with a throughgoing passage forming an upstream bore portion and with a radially extending inlet opening into said passage;

means for releasably and tightly securing said insert in said upstream housing portion in said recess against angular and axial movement therein with said bore portions coaxial; and

a worm extending axially through both of said bore portions.

4,279,516

CONTAINER FOR PASTEURIZING SLUDGE

Erich Zeltner, Gockhausen, Switzerland, assignor to Von Roll AG, Gerlafingen, Switzerland

Filed Jun. 20, 1979, Ser. No. 50,493

Claims priority, application Switzerland, Jun. 26, 1978, 6950/78

Int. Cl.³ B01F *7/24*

U.S. Cl. 366—171 **8 Claims**

1. An apparatus for pasteurizing sludge, comprising:

a substantially cylindrical pasteurization container adapted for conducting a longitudinal flow of sludge through a passage thereof from an upper longitudinal end to a lower longitudinal end, said container having a longitudinal dimension from said upper end to said lower end which is greater than the transverse dimension of the diameter thereof and having a longitudinal axis disposed at a transverse center thereof and extending longitudinally from said upper end to said lower end;

an upper inlet disposed at said upper end of said pasteurization container and adapted to conduct sludge into said pasteurization container;

a lower outlet disposed at said lower end of said pasteurization container and adapted to discharge treated sludge from said pasteurization container;

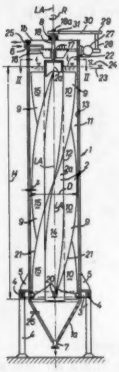
means for supplying sludge to said upper inlet at a predetermined pasteurization temperature;

a central guide member rotatably disposed within said pas-

teurization container substantially along said axis thereof, said guide member having the shape of a geometric solid of revolution and having an axis of rotation coincident with said container axis;

motor means for rotating said guide member in a predetermined direction about said guide member axis; and

a plurality of helical blades wound around said guide member and secured thereto, said blades extending from said



upper end to said lower end to divide said passage into a plurality of individual helical channels coextensive in length with said blades, said blades forming deflectors for said sludge, said blades having a radial dimension substantially equal to the transverse distance from said guide member to an inner wall of said passage; the pitch direction of said helical blades from said inlet to said outlet being the same as said direction of rotation.

4,279,517

MIXING APPARATUS FOR CHEMICALLY REACTING FLUID COMPONENTS, PARTICULARLY POLYURETHANE-FORMING COMPONENTS

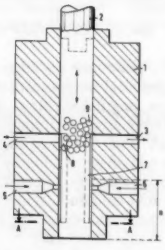
Josef Wallner, Holzkirchen, and Lothar Metzinger, Osnabrück, both of Fed. Rep. of Germany, assignors to Elastogran Maschinenbau GmbH & Co., Munich, Fed. Rep. of Germany

Filed Aug. 20, 1979, Ser. No. 67,449

Claims priority, application Fed. Rep. of Germany, Sep. 6, 1978, 2838798

Int. Cl.³ B01F *5/04;* B29D *27/02*

U.S. Cl. 366—177 **8 Claims**



1. A mixing apparatus for chemically reacting fluid components, preferably polyurethane-forming components, the apparatus having a housing including a mixing chamber with inlet ports for the individual components and an outlet port for a mixture of components and return conduits, a control plunger arranged within said mixing chamber, the cross-section of said control plunger conforming to the cross-section of said mixing chamber, said control plunger adapted to be reciprocated from a position in which said plunger clears said inlet ports into a position in the vicinity of said outlet port in which position said plunger blocks communication between said inlet ports and said mixing chamber, said control plunger having spaced return grooves extending along the outer periphery thereof for connecting said inlet ports to the return conduits in synchronism with the blocking of said inlet ports toward said mixing chamber, the control plunger having a wall surface portion disposed intermediate said return grooves said wall surface portion being provided with separate recesses with closed bottoms, said recesses being spaced from each other and each of said recesses having a width in a direction peripherally of the plunger, the widths of adjacent recesses lapping each other to receive leakage of the fluid components which upon reaction may bear against and slide along the inner periphery of the mixing chamber.

4,279,518

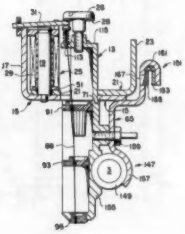
DOT MATRIX PRINT HEAD

James E. Blomquist, and Robert H. Wilczewski, both of 203 E. Main, Riverton, Wyo. 82501

Filed May 14, 1979, Ser. No. 38,724

Int. Cl.³ B41J *3/12*

U.S. Cl. 400—124 **2 Claims**



1. In a dot matrix printer mechanism having a print head extending along a first axis, an elongated head shaft extending along a second axis spaced from a platen, and a main guide bearing movably mounted about said head shaft, the improvement comprising:

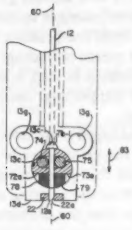
means for removably clamping said print head to said main guide bearing in a fixed position relative thereto with said first and second axes substantially perpendicular, said clamp means including a first clamp portion fixed to said print head, a second clamp portion, and means for mounting said second clamp portion adjacent said first clamp portion for movement toward and away therefrom whereby said print head can be easily and quickly attached to said main guide bearing in a fixed position relative thereto by positioning said first and second clamp portions on opposing sides of said main guide bearing and moving said first and second clamp portions toward each other to tightly grip said main guide bearing therebetween and prevent relative motion between said print head and said main guide bearing and said print head can be easily and quickly removed from engagement with said main guide bearing by moving said first and second clamp portions away from each other.

4,279,519

DOT MATRIX PRINTING DEVICE EMPLOYING NOVEL IMAGE TRANSFER TECHNIQUE FOR PRINTING ON SINGLE PLY OR MULTIPLE PLY PRINT RECEIVING MEDIA

John Shiurila, Londonderry, N.H., assignor to Centronics Data Computer Corp., Hudson, N.H.

Filed Jun. 1, 1979, Ser. No. 44,758
Int. Cl.[3] B41J 3/12, 27/20
U.S. Cl. 400—124 30 Claims



1. Printing means for forming a pattern upon a print-receiving medium comprising:

a reciprocally-mounted elongated printing member and driving means normally maintaining said printing member in a first position with the printing tip of said printing member displaced from said print-receiving medium and for urging said printing member in a first direction to cause said printing tip to engage said print-receiving medium when said driving means is activated;

guiding means guiding the forward end of said elongated printing member to freely enable the reciprocating action of said printing member, said guiding means having a bore, said bore having a contour substantially conforming to the cross-sectional configuration of the printing member which is guided by said bore;

ink supply means removably mounted below said printing member;

slender elongated wick means comprising at least one wicking member extending between said ink supply means and said elongated printing member for supplying ink from said ink supply means upwardly by capillary action through said wick means and upon a longitudinal surface of said elongated printing member which slidably engages said wick means as the elongated printing member undergoes said reciprocating action, whereby ink is transferred to a portion of the longitudinal surface of the printing member which enters into said bore when said driving means is actuated; and

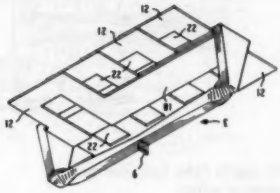
slender elongated absorber means formed of a porous, highly absorbent material positioned between said wick means and said guiding means and displaced from said ink supply means; said absorber means being slidably engaged by said elongated printing member as the elongated printing member experiences said reciprocating action, said absorber means being arranged to absorb ink derived from said wicking means and transferred thereto by said elongated printing member to regulate the flow of ink along said elongated printing member delivered by said wick means toward the printing tip thereof and to provide intermediate storage for ink which enables printing to occur even after said ink supply means is exhausted.

4,279,520

PRINT MECHANISM FOR WIRE PRINTER

John S. Heath, Winchester, England, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 12, 1979, Ser. No. 47,852
Claims priority, application United Kingdom, Jun. 19, 1978, 27243/78
Int. Cl.[3] B41J 3/12
U.S. Cl. 400—124 17 Claims



1. A print mechanism for a wire printer comprising:

a plurality of print elements;

a plurality of individually energizable actuator assemblies each of which includes a primary winding, an associated closed-loop secondary winding having at least a portion thereof movable between a first and a second position, and a transformer core for magnetically coupling the primary winding to its associated secondary winding;

means for generating a static magnetic field across each of the aforesaid movable portions of the secondary windings;

means for fixedly connecting each of said plurality of print elements to a respective one movable portion of each secondary winding; and

means for energizing a primary winding to induce a current in an associated secondary winding so that such induced current reacts with said static magnetic field to produce a force on the movable portion thereof in a predetermined direction from the first to the second aforesaid position, and thereby effect a corresponding movement of the print element from a retracted non-print position to an extended print position;

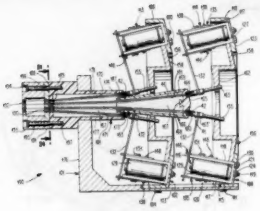
said secondary winding being of the form of a self-supporting single-turn closed loop of an elongated substantially rectangular shape of thin sheet material, the sheet material forming two long limbs and two short side limbs of the rectangle lying in planes at right angles to the plane of the loop, the first one of said long limbs being twisted at its ends with respect to the short limbs so that the first long limb is flexible and may be deflected in the plane of the loop, the static magnetic field being applied across the portion in a direction such that induced secondary winding current creates a force to deflect the portion from a stable rest position to an unstable deflected position;

a plurality of said loops, each of the same general shape but of slightly differing dimensions, being stacked together, electrically insulated from each other, with the deflectable limbs of each of said loops closely parallel to each other, so that the print elements mounted on said deflectable limbs are aligned in a print row across the width of the stack, said other long limb of each loop being supported one upon the other and having a crank portion defining an aperture between the crank and the remainder of the stack of loops for receiving a transformer core, the cranks being disposed between adjacent loops so as to provide sufficient space to accommodate the associated transformer cores.

4,279,521
WIRE MATRIX PRINT HEAD

Drew A. Kightlinger, Lexington, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 2, 1979, Ser. No. 90,942
Int. Cl.³ B41J *3/12*
U.S. Cl. 400—124 **4 Claims**



1. A wire matrix print head comprising:
a first group of wires;
a second group of wires;
first guide means having said first group of wires and said second group of wires extending therethrough and supported thereby for guiding each of said wires of said first and second groups;
a first group of a plurality of magnetic means, each of said magnetic means of said first group causing activation of one of said wires of said first group to cause printing by said activated wire;
first mounting means to mount said magnetic means of said first group on the circumference of a circle and substantially equally angularly spaced from each other;
a second group of a plurality of magnetic means disposed further from the printing ends of said wires of said first and second groups than said magnetic means of said first group, each of said magnetic means of said second group causing activation of one of said wires of said second group to cause printing by said activated wire;
second mounting means to mount said magnetic means of said second group on the circumference of a circle and substantially equally angularly spaced from each other;
each of said magnetic means of said second group has its longitudinal axis out of alignment with the longitudinal axis of each of said magnetic means of said first group;
second guide means to guide only each of said wires of said second group between the activating end of each of said wires of said second group and said first guide means;
each of said wires of said first group having its end adjacent said magnetic means of said first group disposed on the circumference of a circle;
each of said wires of said second group having its end adjacent said magnetic means of said second group disposed on the circumference of a circle;
each of said magnetic means of said first group and said second group including:
a coil;
and a pivotally mounted arm having one end extending inwardly towards the center of the circle on which said magnetic means are disposed;
said one end of each of said arms of said magnetic means of said first group being disposed on the circumference of a circle so as to cause movement of one of said wires of said first group when said arm is moved by energization of said coil;
said one end of each of said arms of said magnetic means of said second group being disposed on the circumference of a circle to cause movement of one of said wires of said second group when said arm is moved by energization of said coil;
separate resilient means acting on each of said wires of said first and second groups to urge each of said wires to a non-print position in which each of said wires contacts said corresponding arm without being connected thereto so that each of said wires can be moved by activation of said corresponding arm by said corresponding coil, each of said separate resilient means returning said corresponding arm to its inactive position when said corresponding coil is deenergized to return said corresponding wire to its non-print position;
said first guide means including:
an elongated housing having a first set of passages and a second set of passages extending therethrough;
each passage of said first set of passages supporting one of said wires of said first group;
each passage of said second set of passages supporting one of said wires of said second group;
and said first set of passages terminating in a circle at their ends remote from the printing ends of said wires;
said second guide means including:
an elongated housing having a set of passages extending therethrough supporting each of said wires of said second group;
and said set of passages terminating in a circle at their ends remote from the printing ends of said wires;
said housing of said first guide means having an opening at its end remote from the printing ends of said wires and of smaller diameter than the diameter of the circle in which said first set of passages terminates;
said housing of said second guide means having a portion extending into said housing of said first guide means through said opening in said housing of said first guide means for support by said housing of said first guide means;
said set of passages of said housing of said second guide means being continuous with said second set of passages of said housing of said first guide means and supporting said wires of said second group from adjacent said magnetic means of said second group to said second set of passages of said housing of said first guide means;
said first and second sets of passages of said housing of said first guide means and said set of passages of said housing of said second guide means cooperating to change the relation of said wires of said first and second groups from a circular configuration at their activating ends to a matrix of rows and columns at their printing ends with each of said wires being spaced from all of the other of said wires throughout its length;
said housing of said first guide means supporting each of said separate resilient means acting on each of said wires of said first group to maintain each of said wires of said first group in contact with said corresponding arm when said wire is in its non-print position;
and said housing of said second guide means supporting each of said separate resilient means acting on each of said wires of said second group to maintain each of said wires of said second group in contact with said corresponding arm when said wire is in its non-print position.

4,279,522
HIGH SPEED PRINTER CARTRIDGE

Edward H. Yonkers, Newton, Mass., assignor to Data Packaging Corporation, Cambridge, Mass.

Filed Dec. 7, 1978, Ser. No. 967,385
Int. Cl.³ B41J *33/10*
U.S. Cl. 400—196.1 **11 Claims**

1. A ribbon cartridge for use with a high speed printer comprising:
cartridge defining parts including at least a cover and base together cooperatively defining a substantially enclosed ribbon storage compartment,
said ribbon storage compartment also being defined by upright walls extending between the cover and base and at least in part defining a compartment inlet and a compartment outlet,

an endless ribbon loop, the majority of which is disposed in the compartment,

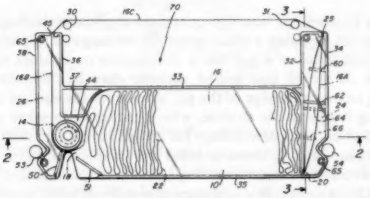
means, including at least in part the cover and base, defining an ingress channel leading to the inlet of the compartment at the inlet end of the compartment and extending transverse to the length of the compartment and defining an ingress leg with a free end spaced from the compartment,

means, including at least in part the cover and base, defining an egress channel leading from the outlet of the compartment at the outlet end of the compartment extending transverse to the length of the compartment and defining an egress leg with a free end spaced from the compartment,

said ingress and egress legs at their free end forming a support for the ribbon with the ribbon free from support therebetween,

the length of the support free section of ribbon being comparable to the length of the storage compartment to maximize said free section length,

means in said egress channel for providing a 180° rotation of



said ribbon as said ribbon traverses through the egress channel,

said means for providing rotation comprising a pair of centrally disposed ribs each extending in opposite directions, one rib from the base and the other rib from the cover, said ribs being each of a height on the order of one-half the channel height and spaced along the egress channel with a small gap therebetween,

said means for rotation further comprising end ribs, one end rib at each end of the egress channel and having opposite sloped walls,

and means for receiving drive means of the printer for driving the endless ribbon loop including a pinch roller means disposed directly at and in part defining the compartment inlet,

said upright walls including a U-shaped wall extending between the cover and base and having the pinch roller means supported adjacent thereto, said cover and base being notched to receive said drive means, said notch and U-shaped wall being disposed on opposite sides of said pinch roller means.

4,279,523

POWER RECOVERY APPARATUS FOR AN ELECTRIC TYPEWRITER

Terry W. Ringle, Lexington, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 14, 1979, Ser. No. 75,391
Int. Cl.³ B41J *19/00*
U.S. Cl. 400—279 **8 Claims**

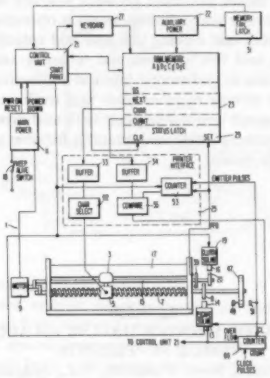
1. Power recovery apparatus for returning the printing element of a printer to a defined position on a print line when power is returned to the printer following a loss of power to the printer during a printing operation, comprising:

displacement means for moving said printing element along said print line;

memory means for storing character identity codes representative of selected characters and address amounts representative of positions of the characters on a print line;

means for defining a print cycle for each character, the cycle having a sequence of print operations for printing the character, said sequence of operations including an initiation operation for starting the print cycle, a completion operation for printing the character and an intermediate operation defining a point in time after which the character will be satisfactorily printed even if power to the printer is lost; and

control means for operating said memory means to store particular character codes and address amounts represen-



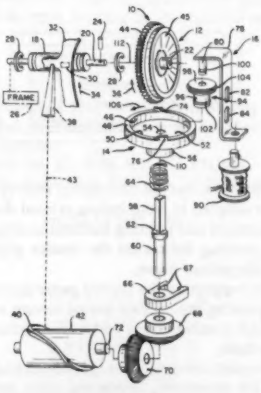
tative of said print operations, said control means responsive to a loss and a subsequent return of printer power for accessing at least the particular character codes and address amounts stored in said memory means at the time of the power loss and operating said displacement means to return said printing element to the print line position of the character following the last character that was printed before said power loss occurred.

4,279,524

APPARATUS FOR ADVANCING A RECORD MEDIUM

William I. Chambers, Wichita, Kans., assignor to NCR Corporation, Dayton, Ohio

Filed Sep. 17, 1979, Ser. No. 76,055
Int. Cl.³ B41J *19/96*
U.S. Cl. 400—564.1 **12 Claims**



1. An apparatus comprising:

a rotatable member having means thereon for connection to an output member and also having a periphery thereon;

said rotatable member also having teeth on said periphery and also having a driving surface thereon;

a rotatable driving unit having a periphery and also having means for rotating said driving unit;

said rotatable driving unit having at least one driving member extending over a portion of the periphery of said driving unit to momentarily engage said teeth during each rotation of said rotatable driving unit and thereby incrementally rotate said rotatable member as said driving unit is rotated by said rotating means; and

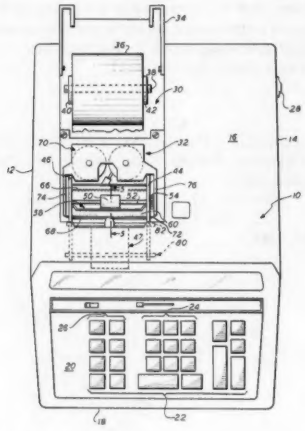
a coupling means moveable between first and second positions whereby said coupling means is operatively disconnected from said driving unit and said rotatable member when in said first position and whereby said coupling means when in said second position is effective to disconnect said driving member from said teeth and to operatively connect said driving unit with said driving surface to continuously rotate said rotatable member as said driving unit is rotated.

4,279,525

CALCULATOR PRINTER HAVING AN ACOUSTIC NOISE SUPPRESSOR

John N. Johnston, North Plainfield, N.J., assignor to Litton Business Systems, Inc., Morris Plains, N.J.

Filed Dec. 3, 1979, Ser. No. 99,520
Int. Cl.³ B41J *11/08, 11/13*
U.S. Cl. 400—656 **5 Claims**



1. In a printer mechanism adapted to receive a quantity of printer paper adapted to have indicia printed thereon;

printing means in said printing mechanism selectively operable for printing indicia on the printer paper by impact against the printer paper;

a platen for supporting the printer paper against the impact of said printing means, said platen having a front surface facing said printing means and a rear surface behind said front surface;

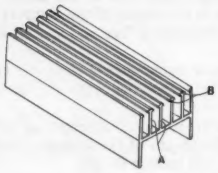
the improvement comprising: means comprised substantially of lead for attenuating acoustical noise fastened to said platen with a thermoplastic compound and extending continously along the length of the rear surface of said platen, whereby acoustical noise generated by the impact of said printing means against the printer paper supported by said platen is attenuated.

4,279,526

RECTANGULAR CONTAINER/APPLICATOR PACKAGE FOR DIMENSIONALLY STABLE SOLID PAINTS AND RELATED MATERIALS

Robert G. McMullan, Oakville, Canada, assignor to SCM (Canada) Limited, Don Mills, Canada

Filed Feb. 8, 1979, Ser. No. 10,382
Int. Cl.³ B43K *19/14*
U.S. Cl. 401—97 **5 Claims**



1. A rectangular box-like container applicator-package for storing and applying a solid, generally rectangular, dimensionally stable block of a gel that is deformable on contact with a surface on which said gelled material may be deposited by wiping an exposed edge of the gel block over the surface while pressing it against the surface, which package can serve when opened as an applicator-holder for the gel block, said container package comprising sheet material and having a series of lines of weakness circumscribing the perimeter of the container and spaced from each other, said lines of weakness being parallel to one end of the container and to each other, and arranged perpendicular to the longitudinal axis of the container, said lines of weakness defining a series of strips there between respectively, each strip being individually removable from the container, whereby one end strip of the box-like container may be removed to open said package and to expose one end of the gel block for use, while the other end of the container may be grasped to permit use of that end of the container as an applicator handle for the gel block, said container having disposed therein, at the end thereof to be grasped, a false bottom structure, said false bottom structure including a base portion that conforms to the shape of the container wall and is engaged against it at the end of the package that is to be grasped and that reinforces the container against pressure that may be exerted while grasping the container to apply the gel, said false bottom structure also being provided with means that project from said base portion into and that are embedded in the gel block to secure the gel block against movement relative to said false bottom structure, wherein said means comprise a plurality of ribs with enlarged upper spur portions that project into the interior of the package and into the gel block from said base portion of the false bottom structure.

4,279,527

LIQUID DISPENSER AND APPLICATOR

Walter Moe, 13039 Sky Valley Rd., Los Angeles, Calif. 90049, and Charles M. Diker, 944 Fifth Ave., New York, N.Y. 10021

Continuation-in-part of Ser. No. 901,293, May 1, 1978, abandoned. This application Nov. 6, 1979, Ser. No. 92,058
Int. Cl.³ A46B *11/04*
U.S. Cl. 401—277 **1 Claim**

1. In a liquid dispenser and applicator for use with highly viscous fluids, the combination comprising:

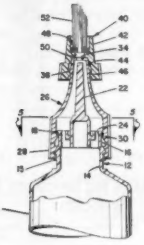
a squeeze-type container formed with a single opening;

a neck member permanently affixed to the container at said single opening to the interior of the container, said neck member having a generally needle-shaped portion extending axially outwardly relative to said single opening, said neck member also including a plurality of arcuate segmented apertures to permit the rapid filling and dispensing of the fluid from the container;

a generally hollow cap member threadably coupled at one

end thereof to said neck member, the other end of said cap member having an opening aligned for passage therethrough of said needle-shaped portion and for closure thereagainst in a manner such that said needle-shaped portion projects beyond the exterior of said cap member with said cap member fully threaded on said neck member, said cap member having a reduced diameter tip adjacent to the opening thereof;

brush means detachably coupled to said reduced diameter tip of said cap member, said brush means having an aperture in general alignment with the opening in said reduced



diameter tip for receiving the projecting end of said needle-shaped portion with said cap member fully threaded on said neck member and for enabling the fluid to flow to the interior of said brush means with said cap member partially unthreaded for applying the fluid to a surface, said brush means including an adapter member having first and second generally cup-shaped openings with a common bottom, said first cup-shaped opening having a rib portion for engaging a rib portion on said reduced diameter tip of said cap member, and said second cup-shaped opening having the brush bristles secured therein.

4,279,528

TULIP MEMBER FOR A TRIPOD JOINT AND PROCESS FOR PRODUCING THE SAME

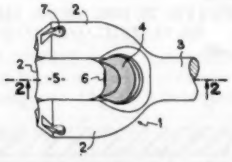
Jacques Mangiavacchi, Chatou; Alain Chauvelot, Boisemont, and Claude Dolain, Les Mureaux, all of France, assignors to Glaenzer Spicer, Poissy, France

Filed Aug. 29, 1979, Ser. No. 70,731

Claims priority, application France, Sep. 18, 1978, 78 26713

Int. Cl.³ F16D *3/00*

U.S. Cl. 403—57 **6 Claims**



1. In a metal tulip member for a tripod type joint, the tulip member comprising a shaft, branches which are connected to the shaft in connection regions and define raceways; the improvement wherein the tulip member is completely carburized except in said connection regions, which regions are substantially devoid of any carburizing.

4,279,529

PROFILE SYSTEM

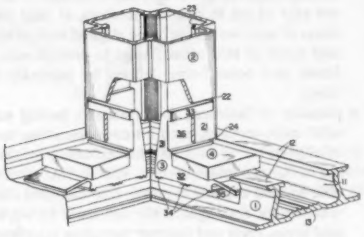
Harald Lande, Avaldsnes, and Leif Johannessen, Konsmo, both of Norway, assignors to Norsk Hydro a.s., Oslo, Norway

Filed Nov. 21, 1979, Ser. No. 96,558

Claims priority, application Norway, Nov. 29, 1978, 784009

Int. Cl.³ F16B *9/00*

U.S. Cl. 403—246 **12 Claims**



1. A structural assembly comprising:

an elongated support member having an end and a wall extending from said end, said wall having therein, and a location spaced from said end, a transverse opening;

an elongated beam to be connected to said support member at said end thereof, said beam having first and second surface portions;

joining means for connecting said beam to said end of said support member such that said beam extends outwardly at an angle with respect to said wall of said support member;

said joining means comprising an angle-shaped member having first and second outwardly extending wings, said first wing having at least one transverse projection extending through said transverse opening in said wall of said support member, said second wing having first and second surfaces, said second wing extending along said beam with said first surface of said second wing confronting said first surface portion of said beam; and

wedge means, wedged in a location between said second surface of said second wing and said second surface portion of said beam, for urging said angle-shaped member such that said first surface of said second wing is urged toward said first surface portion of said beam and such that said transverse projection of said first wing is urged into said transverse opening in said wall of said support member.

4,279,530

FLANGED CONNECTION FOR SHAFTS OR TUBES

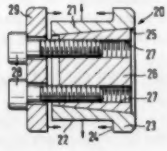
Ralph Mullenberg, Im Wiesengrunde 6, 4048 Grevenbroich 12, Fed. Rep. of Germany

Filed Jul. 23, 1980, Ser. No. 171,486

Claims priority, application Fed. Rep. of Germany, Jul. 24, 1979, 7921137[U]

Int. Cl.³ F16D *1/00*

U.S. Cl. 403—337 **3 Claims**



1. A connection for coupling elongated members together at

adjoining ends of the members, each member having a longitudinal axis, the connection comprising:

a pair of flanges, one flange extending radially from the adjoining end of one elongated member, the other flange extending radially from the adjoining end of the other elongated member, said flanges abutting each other in face-to-face engaging relationship;

a plurality of circumferentially spaced bores extending through said flanges in directions parallel to the longitudinal axes of the elongated members, at least some of said bores of said one flange being aligned with at least some of said bores of said other flange to provide sets of aligned bores, said bores being defined by inwardly facing surfaces;

a plurality of fasteners, said fasteners having substantially solid cross-sections, each fastener extending through a set of aligned bores, each fastener including means for effecting radial expansion thereof, said fasteners being expandable by said expansion means into clamped conditions in which they abut against the inwardly facing surfac e of said bores, each said fastener including interfitting conical members, said expansion means including said interfitting conical members, each said fastener including:

a barrel having an external surface approximately corresponding in diameter to said inwardly facing surfaces of said bores; said barrel also having a collar at one end which extends radially outwardly of said external surface, said barrel further including an internal conical passage therethrough which converges inwardly in a direction away from said collar;

a conical plug disposed in said conical passage, said conical plug having an opening therein, said barrel and conical plug constituting said interfitting conical members;

a disk having a diameter exceeding those of said bores in said flanges, said disk engaging said barrel at a side of said barrel opposite said collar, said disk having a hole therein;

a lock screw extending between said disk and said conical plug, said lock screw cooperating both with said hole in said disk and said opening in said conical plug to threadably couple said disk and said conical plug together;

whereby advancement of said lock screw causes said conical plug to move axially in said conical passage of said barrel to, in turn, effect radial expansion of said barrel.

4,279,531

END ASSEMBLY FOR WIRE STRAND

Kenneth G. McKenzie, Hamilton, Canada, assignor to Greening Donald Co. Ltd., Hamilton, Canada

Filed Dec. 18, 1979, Ser. No. 104,945
Claims priority, application Canada, Dec. 22, 1978, 318499
Int. Cl.³ F16G *11/05*
U.S. Cl. 403—267 **7 Claims**

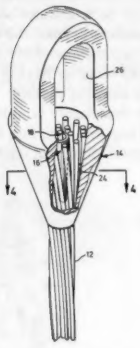
1. An assembly comprising:

a cable having a centre wire and a plurality of wires wound helically about the centre wire in layers, the cable having an end portion;

a serving wrapped about the cable and defining the limit of the end portion;

a socket having a conical opening containing a part of the end portion, the opening diverging outwardly away from the serving;

a conical insert positioned in the end portion and having a conical central opening said opening diverging outwardly away from the serving and containing only the centre wire and a filler metal; and



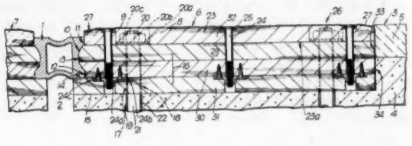
a filler material set in the interstices between the wires and the insert inside the socket.

4,279,532

ROADWAY NOSING UNIT

Henry Miller, deceased, late of London, England, and Desmond Byrne, legal representative, Huntingdon, England, assignors to Acme Flooring Limited, Huntingdon, England

Filed Jun. 29, 1979, Ser. No. 53,516
Int. Cl.³ E01C *11/02*
U.S. Cl. 404—68 **14 Claims**



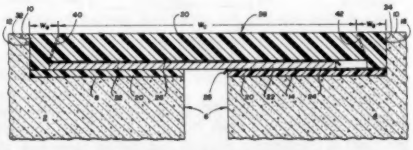
1. A nosing unit for supporting a flexible seal member in an expansion gap of a roadway, which nosing unit comprises a laminated wood base to be fixed in a rebate formed in the edge of a roadway section adjacent to the expansion gap, and a topping part detachably secured to the base and serving in use of the nosing unit to present part of a road surface adjacent the expansion gap.

4,279,533

ROADWAY EXPANSION JOINT

Charles M. Peterson, Franklin, and Frank M. Lymburner, Romeo, both of Mich., assignors to Harry S. Peterson Co., Inc., Pontiac, Mich.

Filed Feb. 20, 1980, Ser. No. 122,920
Int. Cl.³ E01C *11/06, 11/12*
U.S. Cl. 404—68 **13 Claims**



1. In a roadway having concrete sections with upper surfaces aligned to form the roadway surface and spaced from

each other to provide an expansion slot, each concrete section having at the end thereof adjacent said slot a recess which extends longitudinally of the slot and which has a bottom surface generally parallel to the roadway surface and a side surface extending from said bottom surface to the roadway surface;

a metal plate bridging said slot, said metal plate being secured to the bottom surface of one of said recesses and being movable relative to the bottom surface of the other of said recesses; and

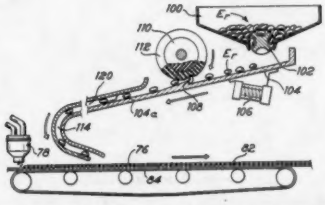
a unitary elastomeric slab above said metal plate and bridging said slot, said elastomeric slab having an upper surface aligned with the upper surface of said concrete sections and having edge surfaces bonded to the side surfaces of said recesses, said elastomeric slab having a premolded center portion of relatively high elasticity and having edge portions which are molded in situ and which are of relatively low elasticity.

4,279,534

METHOD AND APPARATUS FOR APPLYING HORIZONTAL ROAD MARKING MATERIAL OF HIGH OPTICAL EFFICIENCY

Ludwig Eigenmann, Vacallo, Switzerland, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Jul. 2, 1979, Ser. No. 54,236
Claims priority, application Italy, Jul. 5, 1978, 25381 A/78
Int. Cl.³ E01C *23/16*
U.S. Cl. 404—72 **8 Claims**



1. A method of producing on a road surface area a retro-reflective traffic regulating sign including a plurality of asymmetrical retro-reflective elements having a dome-shaped upper portion adapted for light impingement and retro-reflection and a substantially flat lower portion; the method comprising the steps of applying a road marking receptive layer to a road; advancing a plurality of randomly positioned asymmetrical retro-reflective elements along an element supporting surface; orienting said elements during the advancing movement thereof on said surface so that some of said elements are turned over whereby all the elements abut against said surface by the same one of said portions after said orienting step; and applying said properly oriented elements to said receptive layer, said orienting step being performed simultaneously with said step of applying the road marking receptive layer to thereby form a retro-reflective sign-forming composition on the road.

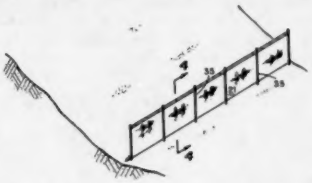
4,279,535

MATERIAL AND SYSTEM FOR MINIMIZING EROSION

Joseph Gagliardi, Westport, Conn., and Charles A. Lee, Knoxville, Tenn., assignors to Mercantile Development, Inc., Westport, Conn.

Filed Oct. 1, 1979, Ser. No. 80,302
Int. Cl.³ E02B *3/04*
U.S. Cl. 405—15 **9 Claims**

1. A material for use as a silt fence, one marginal edge of which is adapted to be buried into the ground and the other marginal on which is adapted to be supported by uprights or the like, above the ground comprising an elongated first strip of material having a relatively uniform porosity which strip of material is fabricated from filaments of less than about 5 denier, an elongated second strip of material fabricated from yarns in a grid pattern, such yarns being in the aggregate of about 3,000 to 7,000 denier per linear inch in each direction and having from 2 to about 8 yarns per inch in each direction, said first and second strips being fabricated from material which does not



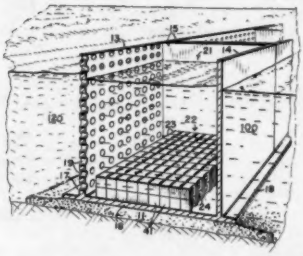
readily deteriorate, and said first and second strips being attached together to provide a composite strip, the composite strip having a Frazier air permeability of 100 to 1,000 cubic feet per square foot at a pressure of ½ inch or water.

4,279,536

FLOW-GUIDING MONOLITHIC BLOCKS FOR MARINE STRUCTURES

Gerard E. Jarlan, Rue due Refuge, 78000 Versailles, France

Filed Mar. 7, 1979, Ser. No. 17,561
Claims priority, application Canada, Dec. 15, 1978, 318057
Int. Cl.³ E02B *3/06, 3/12*
U.S. Cl. 405—31 **22 Claims**



1. A monolithic block for dissipating energy of water motion when exposed as an ordered array of a plurality of blocks exposed to the sea, comprising a six-sided body of between one tonne and 20 tonnes weight having one face to be disposed for impingement by sea water and an opposite face spaced from said one face, said one face having recessed therein at least one aperture defined by the intersection with said one face of at least one passage extending through the block and opening into said opposite face, a first pair of faces parallel with each other and intersecting said one face, a second pair of faces parallel with each other and perpendicular to said first pair of faces and intersecting said one face, the said opposite face having recessed therealong a groove, said groove intersecting said at least one passage and intersecting one pair of said pairs of faces, at least portions of the faces of said pairs being disposed in bounding planes defining the body sides.

4,279,537

APPARATUS FOR AERATING AND MAINTAINING AN ICE FREE SURFACE AREA ON A BODY OF WATER

William H. Tweedy, P.O. Box 68, Glasford, Ill. 61533

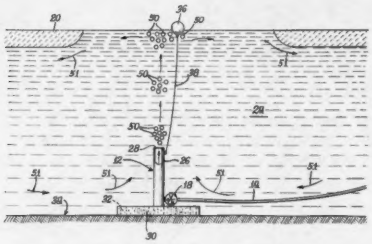
Filed May 21, 1980, Ser. No. 151,922
Int. Cl.³ E02B *15/02*
U.S. Cl. 405—61 **7 Claims**

1. Apparatus for aerating and maintaining a surface area ice free in a body of water such as a pond or lake comprising:

an air diffusion unit comprising an imperforate vertical pipe with a closed bottom end and an open upper end anchored below the surface of said body of water;

an air line extending from a source of air under pressure to the interior of the pipe at the closed bottom end thereof;

the pipe having a large transverse cross-section relative to the cross-section of the air line enabling continual, discrete, large-volume air discharges through repetition of a cycle in which air collects in the bottom of the pipe until



it is displaced by a rapid inrush of water into the top end expelling air in a sudden large volume release followed by a period of no discharge while air collects in the pipe for the next discharge; and

check valve means in a portion of said air line in water which is sufficiently deep to remain permanently unfrozen at the bottom of said body of water, said check valve means thereby maintaining said air line ice free by preventing the back flow of water from said air diffusion unit to below-freezing locations near or above the surface level.

4,279,538

ANTI-POLLUTION AND ANTIFIRE FLOATING BARRIER

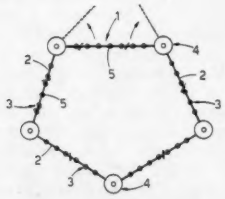
Edoardo Bossa, deceased, late of Rome, Italy (by Maria Piera Ferzero, Loriana Bossa, Ivo Bossa, legal representatives, heirs), assignor to Covalca Plastici S.p.A., Pomezia, Italy

Filed Dec. 13, 1979, Ser. No. 103,058

Claims priority, application Italy, Dec. 19, 1978, 52352 A/78

Int. Cl.³ E02B *15/04*

U.S. Cl. 405—66 **6 Claims**



1. An anti-pollution and antifire barrier to be used on water surfaces or the like, characterized in that it comprises, in combination:

barrier sections **(1)** consisting of laminar, flexible, vertical wall portions **(2)** connected by interposed substantially cylindrical vertical floating bodies **(3)** provided with lower counterweight means **(3*a*)**;

main barrier elements **(4)** each connected to at least one barrier section **(1)** and each constituted of a hollow container with perforated bottom and comprising floating bodies, each container **(4)** housing a hollow revolving drum **(22)** slidable up and down along a vertical axis and connected with means adapted to rotate this drum **(22)** about said vertical axis in both directions, each main barrier element **(4)** being constituted of a peripheral annular vertical floating caisson **(7)** having at least one side entrance orifice of a height greater than that of the barrier sections **(1)** and of a width greater than the maximum thickness of each barrier section **(1)**, in the inner space defined inside the drum **(22)** being mounted a cylindrical wall **(14)** housing at the upper part of its inner cavity a floating caisson **(15)** containing an adjustable amount of a ballast means, while the lower part of this cavity constitutes a seat for receiving an anchoring body **(18)** in the inoperative position thereof and which is supported by a cable **(17)** connected to a winch **(19)** mounted on a platform **(13)** fixedly connected to the upper part of the main barrier element **(4)**, on this platform being also mounted the devices provided for driving the revolving drum **(22)**.

4,279,539

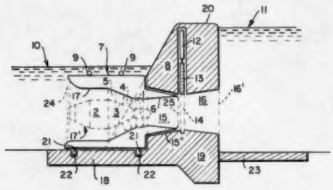
DAM WITH TRANSFORMABLE HYDROENERGETIC ARRANGEMENT

Francisco J. Gutierrez Atencio, Garcia 3101, Diamante Prov. Entre Rios, Argentina

Filed Aug. 17, 1979, Ser. No. 67,318

Int. Cl.³ E02B *9/08*

U.S. Cl. 405—76 **12 Claims**



1. In a fluid storing dam having a main structural body having opposite faces and including means for directing a fluidic flow therethrough, said directing means including a dam body conduit having a dually frustum shaped spatially geometrical configuration flaring substantially from inside said main dam body to both said dam opposite faces to define a pair of adjacent dam conduit branches; the improvement comprising, one or more hydromotive assemblies, each said hydromotive assembly having a conduit, a hydromotive power unit disposed with said assembly conduit for alternately acting upon or being actuated by fluidic flows through said assembly conduit, said assembly conduit having a first open end for admitting fluidic flows and a second open end for discharging fluidic flows, said hydromotive assembly selectively alternatively mounted against each said face of said main dam body with said second open end of said assembly conduit joined within one said dam conduit branch in alignment with the entire said fluidic flow directing means of said dam to form a continuous fluidic flow path through both of the combined hydromotive assembly and fluid storing dam.

4,279,540

COLLAPSABLE DAM

Kyozo Suga, Tokyo; Jinya Iizuka, and Yoshiomi Tsuji, both of Osaka, all of Japan, assignors to Kazuto Nakazawa, General Director Public Works Research Institute Ministry of Construction, Tokyo and Sumitomo Electric Industries, Ltd., Osaka, both of, Japan

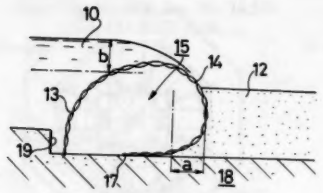
Filed Feb. 9, 1979, Ser. No. 10,773

Int. Cl.³ E02B *7/04*

U.S. Cl. 405—115 **7 Claims**

1. In a deformable dam having an impermeable flexible membrane wall which is water-tightly secured to the bottom and side walls of a river, the improvement comprising: said impermeable flexible membrane wall including at least one hollow bag forming a part of said wall, and means for selective

charging and discharging the hollow bag with a fluid to thereby vary the effective height and length of said dam and



prevent the accumulation of alluvial material under said flexible membrane by having the alluvial material removed by the flow of water over the dam.

4,279,541

STOP END PIECE PARTICULARLY FOR GUTTERS

Peter E. Bruhn, Odder, and Finn U. H. Jensen, Skanderborg, both of Denmark, assignors to Lindab Platisol AB, Bastad, Sweden

Filed May 31, 1979, Ser. No. 44,187
Claims priority, application Sweden, Jun. 5, 1978, 7806560
Int. Cl.³ E04D *13/00*
U.S. Cl. 405—119 **3 Claims**

1. A unitary stop end piece adapted to fit over the end of and permanently close a gutter, said gutter being elongated and having a hollow, generally arcuate cross section, the wall of said gutter extending away from the arcuate edge at the end being closed by said stop end piece being smooth, said wall being thin compared with the radius of curvature of said arcuate cross section, said stop end piece comprising:

a plate;

an edge extending from the periphery of said plate and bent at substantially a right angle with respect to the plane of said plate;

a central portion displaced from the plane of said plate in the direction of said bent edge;

a transitional surface connecting said central portion to said plate along at least a portion of the periphery of said plate and spaced from said bent edge, said transitional surface and said bent edge together defining a channel;

a plurality of teeth extending from said bent edge obliquely into said channel in a direction toward said transitional surface and toward said plate, said teeth terminating a distance from said transitional surface which is less than the thickness of the gutter wall, the end of the gutter to be closed being adapted to be inserted toward said plate into said channel between said transitional surface and said teeth, whereby said teeth bias the smooth gutter wall toward said transitional surface and bite into the surface of the smooth gutter wall thereby forming a permanent liquid-tight joint at the open end of the gutter.

4,279,542

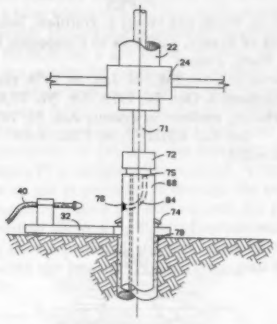
SUBSEA WELL FLOW LINES TIE-IN USING CONDUCTORS

Harry R. Lewis, Jr., Aberdeen, Scotland, assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Dec. 17, 1979, Ser. No. 103,886
Int. Cl.³ E21B *43/01*; F16L *1/04*
U.S. Cl. 405—169 **4 Claims**

1. A method of connecting a subsea flowline to facilities on an offshore platform supported above a body of water by piles extending into the sea bottom, said platform having a plurality of conductors through which wells may be drilled from the platform and extend from the sea floor to above the surface of said water which comprises:

cutting said conductor in two near the sea bottom so as to have an upper portion and a conductor stub,



raising said upper portion of said conductor to form a gap between the upper portion and the conductor stub,

pulling said flowline to the vicinity of said conductor stub,

running a production riser through said upper portion of said conductor, and

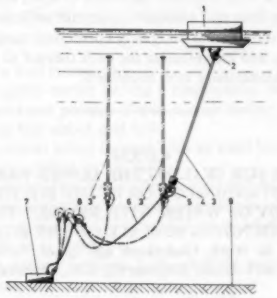
connecting said flowline to the lower end of said production riser.

4,279,543

DEVICE FOR CONVEYING A MEDIUM FROM MEANS PROVIDED IN A FIXED POSITION ON A BOTTOM BELOW THE WATER SURFACE TO A BUOY BODY

George F. M. Remery, Eze-sur-Mer, France, assignor to Single Buoy Moorings, Inc., Fribourg, Switzerland

Filed Jun. 18, 1979, Ser. No. 49,655
Claims priority, application Netherlands, Jun. 20, 1978, 7806649
Int. Cl.³ E02B *17/00*
U.S. Cl. 405—195 **4 Claims**



1. In a device for conveying a medium from a means provided in a fixed position on a bottom below the water surface to an anchored buoy body floating on the water, comprising a conduit connected to said means and extending to the buoy body, of which conduit at least the part connected to said means consists of a flexible tube; the improvement comprising a pipe or rod is fastened to the buoy body by means of a universal joint, said pipe or rod in the operative condition of the device hanging downwardly from the buoy in the water, while at the lower end of the pipe or rod a tube connected to said

means is coupled with the pipe or is directed through or along the rod.

4,279,544

HELICAL APPARATUS FOR COUPLING SUBMERGED PIPES

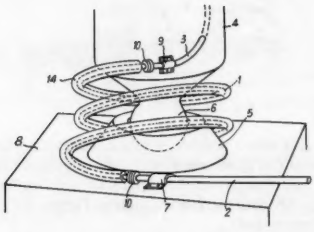
Andre G. Brun, Paris, and Henri T. Dutilleul, Boulogne-Billancourt, both of France, assignors to Compagnie Francaise des Petroles, Paris, France

Continuation of Ser. No. 868,243, Jan. 10, 1978, abandoned. This application Oct. 24, 1979, Ser. No. 87,858

Claims priority, application France, Jan. 11, 1977, 77 00628

Int. Cl.³ E02B *17/00*; F16L *1/04*

U.S. Cl. 405—202 **18 Claims**



1. Connecting means for connecting the ends of at least a pair of pipes, said pipes being immersed in water, one of the pipes having a pipe end being mounted on a movable column structure mounted on a fixed structure for oscillatory movement relative to said fixed structure, the other of said pipe ends connected to an underwater oil well, said connecting means comprising, in respect to said pair of pipes, a tube formed into a helix having a plurality of helical turns, said turns having a greater diameter than said movable column and a length greater than the maximum distance between said pipe ends, said tube surrounding the lower end of said movable column structure, said tube being connected to said pipe ends by detachable connectors to receive the output of said oil well, said tube having a wall thickness sufficient to resist the pressure of oil emerging from said well and a diameter sufficient to convey the oil well output, and buoyancy correcting means surrounding said tube and intermediate the ends thereof to provide said tube with substantially zero buoyancy.

4,279,545

DEVICE FOR SEALING THE LOWER PART OF A COLUMN STANDING ON OR IN THE BOTTOM BELOW A BODY OF WATER WITH RESPECT TO THE SURROUNDING SURFACE OF THE BOTTOM

Karel J. C. de Werk, Ouderkerk a.d. Ijssel, Netherlands, assignor to RSV-Gusto Engineering B.V., Rotterdam, Netherlands

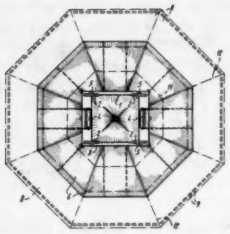
Filed Jul. 3, 1979, Ser. No. 54,625

Claims priority, application Netherlands, Jul. 6, 1978, 7807340

Int. Cl.³ E02D *31/10*

U.S. Cl. 405—211 **5 Claims**

1. A device for sealing the lower part of a column standing on or in the bottom below a body of water with respect to the surrounding surface of the bottom characterized by a plate-shaped body surrounding the column, said plate-shaped body at least on the circumference thereof having a flexible border strip running along the entire circumference, said plateshaped body being a rigid plate mounted on a rigid sleeve surrounding the column and extending downward with respect to the plate, the walls of said sleeve being parallel to the walls of said column, both said body and said strip being of impermeable material.



4,279,546

GROUT SEAL PREMATURE INFLATION PROTECTIVE SYSTEM

Don B. Landers, Arlington, Tex., assignor to Oil States Rubber Company, Arlington, Tex.

Filed May 29, 1979, Ser. No. 42,795

Int. Cl.³ E02D *5/14*

U.S. Cl. 405—225 **8 Claims**

1. In a grout seal premature inflation protection system: a piling and piling sleeve structure forming an annulus; an inflatable seal mounted in place within the bottom of said piling sleeve structure to form a seal at the bottom of said annulus upon inflation after the piling has been driven; seal inflation line means extended from fluid pressure application means to said inflatable seal; and anti-premature inflation structure means positioned low in said seal inflation line means and structured such as to prevent gravity induced hydrostatic pressure in said seal inflation line means from causing premature inflation of said inflatable seal before driving of said piling.

4,279,547

BENTONITE-GELLED OIL WATERPROOFING COMPOSITION

Arthur G. Clem, Des Plaines, Ill., assignor to American Colloid Company, Skokie, Ill.

Continuation of Ser. No. 942,935, Sep. 18, 1978, Pat. No. 4,209,568. This application Nov. 1, 1979, Ser. No. 90,295

Int. Cl.³ E02D *19/12*

U.S. Cl. 405—258 **14 Claims**

1. A bentonite composition useful for preventing a flow of water through a structure said composition having substantially all of the bentonite contained therein in non-hydrated form comprising bentonite, in an amount of at least 20% by weight of the total composition, dispersed throughout a non-aqueous gel formed from a non-aqueous liquid and a suitable gelling agent for said liquid said gelling agent included in said composition in an amount sufficient to form a cohesive mass capable of adhering to said structure while maintaining a desired, cohesive form.

4,279,548

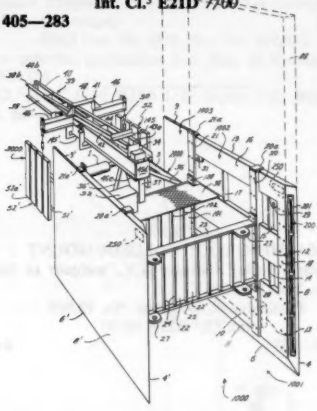
HYDRAULIC PROPULSION UNIT

Raymond W. Ramey, P.O. Box 220, Bellaire, Tex. 77401

Filed Feb. 22, 1979, Ser. No. 14,111

Int. Cl.³ E21D 7/00

U.S. Cl. 405—283 **15 Claims**



1. A trenching device for use in preparing for the excavation of ditches, for use in conjunction with a hoe or similar excavation mechanism used for the excavation of such ditches, comprising:

an excavation box;

propulsion means for advancing said excavation box, said propulsion means being vertically and horizontally hingedly connected to said excavation box; and

anchoring means for bracing said propulsion means against the walls of the already excavated portion of the ditch, said anchoring means being vertically and horizontally hingedly connected in said excavation box posteriorily of said excavation box.

4,279,549

METHOD AND APPARATUS OF SELF-REGULATION FOR A PNEUMATIC CONVEYOR

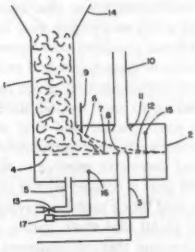
Jean-Pascal Hanrot, Aix-en-Provence, and Jacky Volpeliere, Mimet, both of France, assignors to Aluminum Pechiney, Lyons, France

Continuation-in-part of Ser. No. 904,395, May 10, 1978, abandoned. This application Sep. 24, 1979, Ser. No. 78,477

Claims priority, application France, May 18, 1977, 77 16070

Int. Cl.³ B65G 57/66

U.S. Cl. 406—14 **2 Claims**



1. A self-regulating pneumatic conveyor for pulverulent material comprising a vertically disposed feed column, means for feeding the feed column with pulverulent material for gravitation flow downwardly therethrough, a vertically disposed pneumatic conveying tube alongside the feed column, a forwarding chamber between the feed column and the pneumatic conveyor tube having a porous bottom fluidization wall and a wall separating the feed column and the forwarding chamber which terminates in spaced relation above the porous fluidization wall whereby the material at the foot of the feed column forms a talus which extends into the forwarding chamber in the direction toward the pneumatic conveying tube, a feed tube for introducing a gas under pressure into the forwarding chamber, a tube for supplying fluidization gas below the porous fluidization wall, means for measuring the pressure Pf below the porous fluidization wall, means for measuring the pressure Pc above the porous fluidization wall, and means for varying the circulation of gas from the supplying tube in response to pressure Pf as compared to pressure Pc for reducing the circulation of gas at pressure Pf through the porous wall when the pressure Pc above the wall exceeds the pressure Pf with corresponding decrease in flow of pulverulent material, and increasing the circulation of gas at pressure Pf through the porous wall when the pressure Pc above the wall falls below the pressure Pf.

4,279,550

DEEP HOLE BORING TOOL WITH REPLACEABLE BLADE

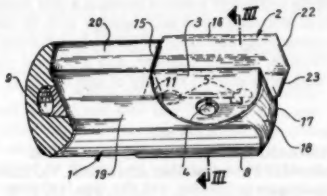
Dieter Kress, Aalen, and Friedrich Häberle, Lauchheim, both of Fed. Rep. of Germany, assignors to MAPAL Fabrik für Präzisionswerkzeuge Dr. Kress KG, Aalen, Fed. Rep. of Germany

Filed Jan. 16, 1976, Ser. No. 649,904

Claims priority, application Fed. Rep. of Germany, Jan. 21, 1975, 2502183

Int. Cl.³ B23B 41/02, 51/06

U.S. Cl. 408—59 **6 Claims**



1. A boring tool comprising:

(a) an elongated carrier having a longitudinal axis,

(1) an axial end portion of said carrier having a convexly arcuate face about said axis,

(2) said carrier being formed with an axial bore terminating in an orifice in said face,

(3) said end portion having first and second axially extending surface portions bounding a groove in said face, said groove being open in a radially outward direction and in both axial directions,

(4) said surface portions being formed with respective recesses;

(b) a plate shaped cutting blade releasably received in the recess of said first surface portion and having two major surfaces separated by the thickness of said blade and connected by the edge of said blade,

(1) a primary cutting portion of said edge axially projecting from said end portion,

(2) a secondary cutting portion of said edge radially projecting from said end portion, and

(3) one of said major surfaces being exposed in said groove and substantially flush with said first surface portion;

(c) clamping means for securing said blade in the receiving recess,

(1) said clamping means including a clamping jaw re-

ceived in said recess of said second surface portion and abuttingly engaging said blade,

(2) said clamping jaw having a major exposed surface substantially flush with said second surface portion.

4,279,551

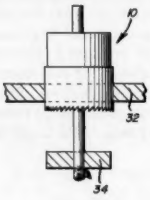
HOLE SAW PILOT PIN WITH PLUG RETRIEVAL MECHANISM

Jerry L. Wilterding, 2907 Meadow La., Barnwell, S.C. 29812

Filed Jul. 26, 1979, Ser. No. 62,154

Int. Cl.³ B23B *47/00, 51/00*

U.S. Cl. 408—67 **5 Claims**



1. A plug retrieval mechanism for use in retaining a cut plug on an elongated rotatable member extending outwardly from a rotatable cutting means for cutting said plug, said mechanism comprising:

a longitudinally extending slot formed in a free end of said member;

a mounting pin affixed to said member and extending across and contained substantially with said slot;

an elongated catch rotatably mounted on said mounting pin at a position offset from a center portion of said catch, said catch being capable of rotation between a first position in substantial alignment with said member with all surfaces of said catch being contained within a plane defined by an outer diameter of said member, and a second position where said catch extends radially of said member.

4,279,552

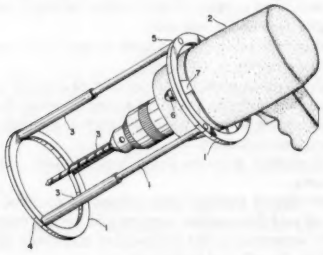
PORTABLE ELECTRIC DRILL GUIDE

Ira J. Epstein, 4423 Flintstone Rd., Alexandria, Va. 22306

Continuation-in-part of Ser. No. 915,018, Jun. 13, 1978. This application Nov. 5, 1979, Ser. No. 91,192

Int. Cl.³ B23B *45/14*

U.S. Cl. 408—112 **1 Claim**



1. A portable electric drill to which is attached a guide comprising a plurality of telescopically collapsible legs firmly attached to a lower ring adapted in use to be placed against an object to be drilled, said legs also being firmly attached to an upper ring adapted to be firmly attached to the drill head of a portable electric drill there being a plurality of tabs mounted on the upper ring of the guide each tab containing a hole adapted to correspond to the screws which hold the drill body together at least one of the plurality of tabs mounted on the upper ring being slideable in a slit in the upper ring.

4,279,553

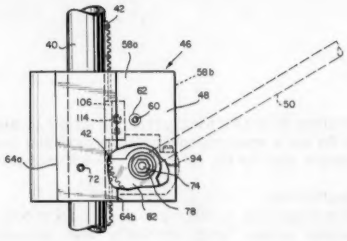
MACHINE TOOL COLUMN MOUNT

John P. Cleary, Valley Cottage, N.Y., assignor to Ralph A. Heineman, New York, N.Y.

Filed Mar. 9, 1979, Ser. No. 19,169

Int. Cl.³ B23B *39/00*

U.S. Cl. 408—135 **4 Claims**



1. In a machine tool of the type including a vertical column for supporting a tool bit head assembly at a particular position relative to a workpiece, said column having an elongated rack gear fixed thereto in longitudinal alignment therewith, the improvement comprising a support member mounted for sliding movement along said column for reciprocally supporting said head assembly on said column, actuable gear means mounted to said support member wherein said support member is adjustably movable relative to said workpiece when said gear means is in a first state, and said support member is freely locatable on said column at a desired starting position relative to said workpiece when said gear means is in a second state, said gear means including a pinion gear having teeth extending therefrom over at least a partially circular arc, said pinion gear being pivotally mounted to said support member by an axial shaft extending through said support member for rotational movement relative thereto, said pinion gear and said rack gear being constructed and arranged so that said pinion gear engages said rack gear when said pinion gear is rotated within a given range of rotational positions corresponding to said first state, and said pinion gear disengages said rack gear when said pinion gear is rotated within another given range of rotational positions corresponding to said second state, and means for urging said pinion gear toward said first state, said urging means including a block member surrounding said shaft and adapted to be rotated therewith relative to said support member when said pinion gear is rotated within said other range of rotational positions, said block member having a recess therein extending arcuately about said shaft, spring extending within said recess so that one end thereof confronts a corresponding end of said recess, and a stud fixedly extending from said support member to engage the other end of said spring so that said spring is deformed when said shaft rotates said pinion gear within said other range.

4,279,554

TOOL FOR DEBURRING, CHAMFERING, TRIMMING, AND REMOVING EDGES OF WORKPIECES

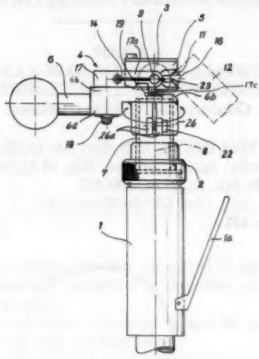
Heinz Seidenfaden, Varel, Fed. Rep. of Germany, assignor to Vereinigte Flugtechnische Werke-Fokker GmbH, Bremen, Fed. Rep. of Germany

Filed Dec. 10, 1979, Ser. No. 102,037

Claims priority, application Fed. Rep. of Germany, Dec. 9, 1978, 2853323

Int. Cl.³ B23C *1/20;* **B23B** *3/22;* **B24B** *7/00;* **B23D** *67/00*

U.S. Cl. 409—180 **6 Claims**



1. A machine tool for chamfering, deburring, trimming of edges, or the like, of a work piece, comprising:

a motor-driven spherical cutter, rotating about a first axis, traversing a center of the cutter;

a guide member, having a slot and receiving the cutter, the guide member determining the relative position of the work piece; and

means for mounting the guide member for pivoting about a second axis transversely to the said first axis and at least approximately intersecting the first axis in said center.

4,279,555

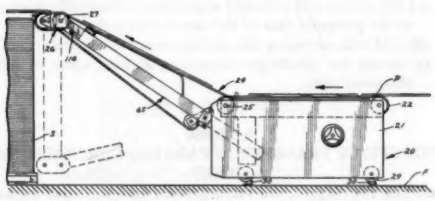
MACHINE FOR STACKING PANELS

Edmund W. F. Rydell, 14926 Minnetonka Industrial Rd., Minnetonka, Minn. 55343

Filed Dec. 29, 1978, Ser. No. 974,330

Int. Cl.³ B65G *57/112*

U.S. Cl. 414—83 **4 Claims**



1. In a machine for stacking rectangular panels of building material or the like,

(a) an input conveyor for receiving panels at its rear end and conveying them forwardly therealong,

(b) an elongated elevator conveyor pivoted to the forward end of the input conveyor for receiving and further conveying panels from said end of the input conveyor,

(c) an elongated discharge conveyor pivoted to the extended end of the elevator conveyor for further conveying panels beyond the end of the elevator conveyor and onto a stack, wherein said discharge conveyor has a drop off shoe assembly at its forward end to catch the rear edge portion of a panel as it leaves the conveyor, and stop means on said conveyor actuated by the panel for lowering the shoe assembly to slowly deposit the panel upon a stack thereof,

(d) the elevator conveyor pivot and the discharge conveyor pivot lying on parallel axes,

(e) a first power means for driving all three conveyors to convey panels successively and forwardly therealong until they are discharged from the discharge conveyor, and

(f) a second power means for elevating the elevator conveyor about its pivotal connection with the input conveyor.

4,279,556

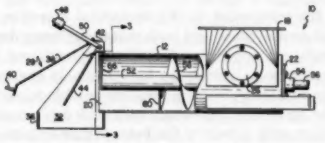
AUGER AIRLOCK ASSEMBLY HAVING PRODUCT CUTTING KNIFE

Richard L. Ronning, Overland Park, Kans., assignor to Ronning Engineering Company, Inc., Overland Park, Kans.

Filed Jan. 11, 1980, Ser. No. 111,233

Int. Cl.³ B65G *53/48*

U.S. Cl. 414—218 **5 Claims**



1. An auger airlock, comprising:

an elongated material-conveying tube having an inlet, and an outlet spaced from the inlet;

an elongated, axially rotatable shaft within said tube, oriented generally along the longitudinal axis of the tube, and extending to a point adjacent said outlet;

a helical auger blade disposed about and secured to said shaft within said tube and presenting an end edge proximal to said outlet which extends generally radially from said shaft toward said tube in a first direction; and

shiftable means adjacent said outlet for preventing blockage of said tube by said material including an elongated blade secured to the end of said shaft adjacent said outlet, the longitudinal axis of said blockage-preventing blade extending generally radially outwardly from said shaft in a second direction different from said first direction,

said shaft, auger blade end edge, blockage-preventing blade and tube being cooperatively configured and arranged such that, when said end edge is in the lower portion of said tube for imparting maximum translation forces to said material, said lower portion of the tube is free of substantial material flow restrictions between said auger end edge and said outlet.

4,279,557

APPARATUS FOR LOADING BALES ON TO TRANSPORT VEHICLES

Eberhard Stodt, Düsseldorf, and Erwin Kaldenbach, Ratingen, both of Fed. Rep. of Germany, assignors to Lindemann Maschinenfabrik GmbH, Düsseldorf, Fed. Rep. of Germany

Division of Ser. No. 952,841, Oct. 19, 1978. This application Jan. 8, 1980, Ser. No. 110,464

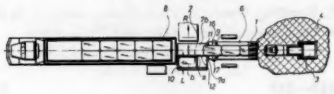
Claims priority, application Fed. Rep. of Germany, Dec. 2, 1977, 2753720

Int. Cl.³ B65G *67/14*

U.S. Cl. 414—400 **3 Claims**

1. Apparatus for loading on to a transport vehicle bales of waste material which have been ejected from the discharge opening of horizontally acting baling press, said apparatus being arranged to be disposed adjacent said discharge opening

of said press and comprising, located in succession, a horizontal rectilinear discharge table adjacent said opening and aligned with the discharge opening so that the bales of waste material move along said discharge table in the discharge direction out of the baling press, said discharge table having a first end adjacent the discharge opening from the baling press and a second end remote from the discharge opening, said discharge table haing a vertical central plane extending longitudinally from the first end to the second end thereof with the central plane being equidistantly spaced from the sides of said discharge table, a transverse table adjacent the second end of said discharge table, drive means for displacing said transverse table horizontally and perpendicularly to the vertical central plane of said discharge table with said transverse table being located approximately in the same horizontal plane as said discharge table, hauling tongs, means mounting said hauling



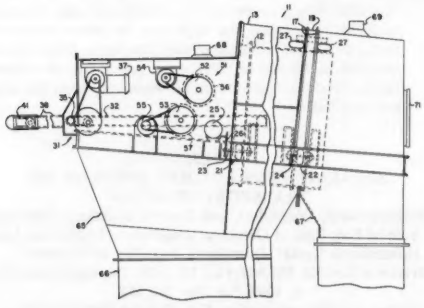
tongs for movement in the horizontal direction along said vertical central plane and with said tongs being disposed symmetrically on opposite sides of said plane, and said means arranged to move said tongs for selectively engaging a single bale for movement from said discharge table to said transverse table to form in cooperation with said drive means for said transverse table a pair of the bales in side-by-side relation on said transverse table with the contacting sides of the pair of the bales being located in the vertical central plane and also to move said tongs over said transverse table for displacing the pair of the bales thereon from the opposite side of said transverse table from the second end of said discharge table onto the transport vehicle in an extension of the direction between the first and second ends of said discharge table and for displacing any previously displaced pairs of the bales located on the transport vehicle in a continuation of the direction between the first and second ends.

4,279,558

BAG OPENING APPARATUS

Gilbert V. Lavoie, 311 Elm St., Raynham, Mass. 02767

Filed Dec. 11, 1978, Ser. No. 967,915
Int. Cl.³ B65B *69/00*; B65G *65/00*
U.S. Cl. 414—412 **14 Claims**



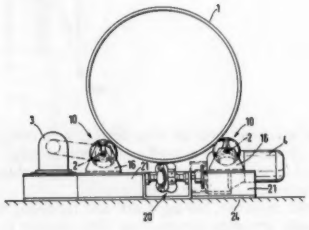
1. A bag opening apparatus comprising:
a frame means;
a perforate drum mounted on said frame means for rotation along a substantially horizontal axis, one end of said drum defining a bag receiving opening and an opposite end thereof defining a bag discharge opening;
drum drive means for producing rotation of said drum;
a material receiving hopper mounted on said frame below said drum;
conveyor means for conveying particulate material filled bags into said drum through said bag receiving opening;
blade means mounted on said frame means and disposed so as to penetrate bags while said bags are being conveyed by said conveyor means, said blade means comprising a pair of rotary blades lying in substantially the same plane and having cutting edge portions lying in a common plane transverse to said same plane; and substantially parallel to said conveyor means and
enclosure means substantially enclosing said drum.

4,279,559

SUPPORT INSTALLATION FOR LARGE CYLINDRICAL LOAD UNITS, PARTICULARLY LARGE TUBES

Karl Stumpf, Goethestrasse 1, 4000 Dusseldorf, Fed. Rep. of Germany

Filed Feb. 16, 1979, Ser. No. 12,939
Claims priority, application Fed. Rep. of Germany, Feb. 18, 1978, 2806959; Jan. 11, 1979, 2900820
Int. Cl.³ B65G *39/14*
U.S. Cl. 414—431 **6 Claims**



1. A support installation for use with large, cylindrical loads to provide rotational and longitudinal movement for the load comprising:
(a) a plurality of non-driven all-round rolls arranged on two principal rotational axes at intervals, along the length of the load, said rotational axes being at approximately the same height and parallel to the axis of the load and being located at a distance from each other which is less than the diameter of the load;
(b) a driven all-round roll having a principal rotational axis displaced longitudinally along the length of the load relative to said non-driven rolls;
(c) the driven roll principal axis being substantially normal to the principal axes of the non-driven rolls;
(d) said rolls engaging the circumference of the load; and
(e) means for yieldingly supporting at least some of said all-round rolls.

4,279,560

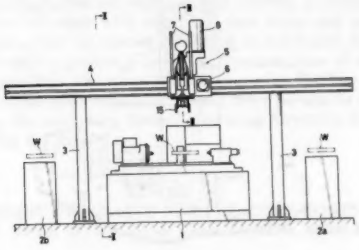
WORKPIECE TRANSFER APPARATUS FOR MACHINE TOOL

Teruyuki Ito, Nagoya, and Yasuo Suzuki, Kariya, both of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Jan. 16, 1980, Ser. No. 112,711
Claims priority, application Japan, Jan. 30, 1979, 54-8742
Int. Cl.³ B23B *13/12*
U.S. Cl. 414—589 **8 Claims**

1. A workpiece transfer apparatus for transferring a workpiece for a machine tool comprising:
a cross-rail horizontally arranged above said machine tool;
a carrier body supported on said cross-rail to be movable along said cross-rail;
a stationary shaft secured to said carrier body;
a stationary gear fixedly mounted on said stationary shaft;

a first crank arm rotatably mounted on said stationary shaft;
means for rotating said first crank arm;
a planet gear rotatably carried on said first crank arm and engaging with said stationary gear;
a driven gear rotatably carried on said first crank arm and engaging with said planet gear;
a second crank arm fixedly connected to said driven gear;
a crank pin fixedly secured to said second crank arm;
a connecting member pivotably connected at one end thereof to said crank pin;

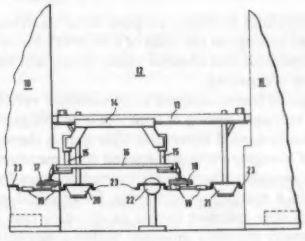


lift means vertically movably supported by said carrier body and operatively connected to the other end of said connecting member;
grip means pivotably supported by said lift means for gripping or releasing said workpiece;
a cam member secured to said crank pin;
operating means operatively connected to said grip means; and
a cam follower mounted on said operating means and engaged with said cam member for opening and closing said grip means in accordance with the shape of said cam member.

4,279,561
WORKPIECE CONVEYOR DEVICE FOR AN AUTOMATED PRESS LINE

Franz Schneider, Göppingen; Burkhard Schumann, Ottenbach; Karl Maier, Kuchen, and Herbert Höhn, Göppingen, all of Fed. Rep. of Germany, assignors to L. Schuler GmbH, Goppingen, Fed. Rep. of Germany

Filed Oct. 23, 1978, Ser. No. 953,783
Claims priority, application Fed. Rep. of Germany, Oct. 21, 1977, 2747237
Int. Cl.³ B66F *11/00*; B30B *15/00*
U.S. Cl. 414—591 **7 Claims**

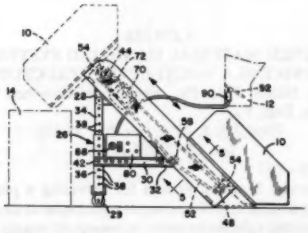


1. An adjustable workpiece conveyor device suitable for automation of a plurality of different press lines by providing a movable conveyor carriage in an intermediate space between two presses, said movable carriage being coupled to a cross member having adjustable supports at the ends of the cross member, said supports having paired opposed controllable gripping elements for gripping the workpieces which point in opposite directions, and wherein between the presses there are located at least two lay-off stages for the workpieces that are to be conveyed from one press to the other press, and a positioning stage, of which stages at least two can be spanned by the cross member, comprising:
a first setting drive for moving the conveyor carriage horizontally on an adjustable supporting frame having a track that bridges the whole intermediate space;
a second setting drive coupled between the cross member and the conveyor carriage for a raising and lowering of the cross member; and
a third setting drive coupled to the positioning stage to operate said positioning stage;
wherein the first, second and third setting drives are controlled by a continuous-path numerical control unit, wherein the supporting frame is movable from the region of the intermediate space in a direction which is at a right angle to the direction of conveying the workpieces, and wherein the positioning stage can be moved out from the intermediate space at an angle to the direction of converging of the workpieces to allow for access to the presses from the input or feed sides through the intermediate space for changing press tools,
and
wherein the workpiece conveyor device is adaptable to a plurality of different press lines by the removability of the support frame from one intermediate space to another, by the adjustability of the length of the support frame to fit a desired intermediate space, by the selection of the cross member to span at least two stages in the desired intermediate space, and by selection of a program for the continuous-path numerical control unit for the particular press line to which the workpiece conveyor device is being connected.

4,279,562
BUCKET CONVEYOR

Edward J. Cormier, and Wayne Copley, both of P.O. Box 44164, Columbus, Ohio 43204

Continuation-in-part of Ser. No. 818,614, Jul. 25, 1979, abandoned. This application Oct. 25, 1979, Ser. No. 88,218
Int. Cl.³ B65G *35/00, 43/00*
U.S. Cl. 414—598 **3 Claims**



1. An intermittently operable, portable bucket conveyor, comprising:
a frame member having:
a pair of spaced upwardly inclined guide rails;
means securing said guide rails together in spaced parallel relation;
a pair of vertically extending horizontally spaced legs pivotally secured at upper end portions of each thereof to respective upper edge portions of said inclined guide rails and having means for adjusting the height of said legs; and
horizontally extending braces pivotally connected at one end portion of each to said inclined guide rails remote from said pivotal connection of said legs and having an

opposite end portion of each secured to a respective one of said legs, said braces being adjustable lengthwise to accommodate height adjustment of said legs for inclining said inclined guide rails at a desired angle;

a bucket capable of containing at least one article therein and movably supported on said guide rails for movement between a lower most position wherein at least one article can be deposited therein and an uppermost position wherein said at least one article will be dumped therefrom;

bucket moving means supported by said frame member and extending along said inclined guide rails for moving said bucket between said upper and lower positions, said moving means including:

at least one endless chain extending from a bottom end portion to a top end portion of said guide rails;

sprockets disposed at each said end portion of said guide rails and drivingly supporting said at least one endless chain for movement in an elongated path with annular end portions defined by movement of said chains around said sprockets, at least one of said sprockets being adjutably positionable towards and away from the other said sprocket; and

means securing said bucket to said at least one endless chain for movement therewith, said securing means being operable for movement around a portion of said annular end portion of said path of movement at least at said top end portion of said guide rails so as to cause said bucket to dump said at least one article therefrom;

drive means engaging said one sprocket for causing rotation thereof;

clutch means intermediate said one sprocket and said drive means for disengaging said drive means upon application of a predetermined force to said bucket;

means for activating said drive means so as to cause said bucket to move from said lower position to said upper position; and

means for causing said drive means to reverse when said bucket is in said upper position so as to move said bucket from said upper position to said lower position after it has dumped said at least one article.

4,279,563

UNMANNED MATERIAL HANDLING SYSTEM FOR SERVICING A MULTI-LEVEL STRUCTURE

William R. Miller, Erie, Pa., assignor to American Sterilizer Company, Erie, Pa.

Filed Jul. 5, 1979, Ser. No. 55,055
Int. Cl.[3] B66F *11/00*
U.S. Cl. 414—611 **7 Claims**

1. A material handling system for servicing a plurality of vertically spaced levels of a structure, said system comprising:

an unmanned vehicle adapted to transport cargo between said vertically spaced levels;

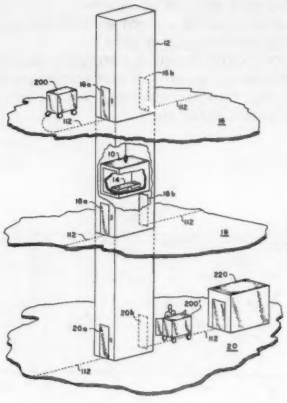
electro-mechanical drive means for propelling said vehicle along a surface of a selected one of said levels;

means disposed within said vehicle for storing energy and for imparting said stored energy to said electro-mechanical drive means;

means for vertically moving said vehicle to each of said spaced levels; and

means coupling said vehicle and said vertical moving means while said vehicle is supported by said vertical moving means for transmitting energy from an external source to said energy storage means, said energy transmission means being deployed within and movable with said vertical moving means, and being operable while said vertical moving means is moving vertically;

said vertical moving means being free of interior obstructions to safe occupancy and movement by passenger personnel and thereby being adaptable, without modification,



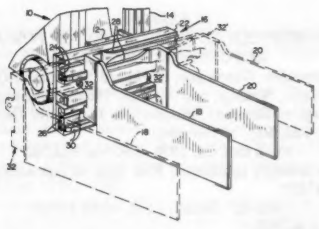
for transporting said passenger personnel between said vertically spaced levels.

4,279,564

PARALLEL ARM CLAMP HAVING IMPROVED ATTACHING ASSEMBLY FOR NARROW CLAMP ARMS

Harry F. Weinert, Portland, Oreg., assignor to Cascade Corporation, Portland, Oreg.

Filed Jan. 14, 1980, Ser. No. 111,778
Int. Cl.[3] B65G *65/04*; B66F *9/18*
U.S. Cl. 414—621 **9 Claims**



1. A load-handling structure adapted to be mounted on an elevatable load carriage at the front of a lift truck for operating transversely openable and closable clamp arms, said load-handling structure comprising:

(a) a slide guide frame, adapted to be mounted vertically on the load carriage, having at least a pair of elongate, parallel, vertically-spaced transverse slide guides thereon;

(b) a pair of elongate vertically-spaced slide members longitudinally movable alternatively toward or away from one another in a mutually-overlapping longitudinal relationship, each slide member having an elongate rear portion longitudinally movably mounted within a respective one of said guides, and a longitudinally-extending elongate front portion having a longitudinal axis substantially parallel to a plane extending vertically and longitudinally with respect to said slide members, each of said elongate front portions being external of the respective guide so as to protrude forwardly therefrom and being fixedly connected to said rear portion so as to move longitudinally in unison therewith, each of said elongate front portions having an end surface located adjacent one longitudinal extremity thereof and also protruding forwardly from the

respective guide, said respective end surfaces being located at opposite ends of said pair of slide members and having respective vertical dimensions greater than the respective vertical dimensions of said front portions along a major part of their length;

(c) said respective end surfaces and said elongate front portions of both of said pair of slide members all being substantially aligned with one another parallel to said plane; and

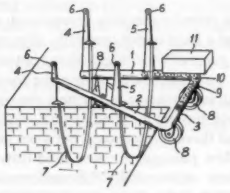
(d) a pair of clamp arm attaching members, each having a pair of legs formed monolithically and homogeneously into a single member with said legs oriented at substantially a 90° angle with respect to each other, and each having a first leg thereof connected in end-to-end abutment with a respective one of said end surfaces of said elongate front portions so that said respective first legs are also substantially aligned with each other parallel to said plane, the second leg thereof protruding forwardly from the first leg thereof.

4,279,565

HOISTING APPARATUS FOR PLEASURE BOATS

Robert E. Verdy, 26, Avenue du General-Leclerc, 64000 Pau, France

Filed Sep. 11, 1978, Ser. No. 941,081
Claims priority, application France, Sep. 15, 1977, 77 27864
Int. Cl.³ B60P *3/10*
U.S. Cl. 414—678 **12 Claims**



1. Apparatus for hoisting a boat comprising first and second booms, a cross member connected to and spacing said first and second booms from one another at a first end thereof to provide an open-ended structure adapted to receive said boat via the open end thereof, boat support means for supporting said boat mounted by said first and second booms, at least three wheels for supporting said open-ended structure, said wheels being mounted with respect to only said first boom and the cross member, said wheels being disposed at the apexes of an imaginary triangle where the perpendicular from the center of gravity of the boat itself, when supported by said boat support means, passes outside said imaginary triangle, and a counterweight located in the part of the structure supported by the wheels so that the perpendicular from the center of gravity of the combined hoisting apparatus and boat passes through said imaginary triangle.

4,279,566

BACKHOE FRAME WEDGE MOUNT

Thomas M. Sagaser, Gwinner, and Joseph M. Mather, Lisbon, both of N. Dak., assignors to Clark Equipment Company, Buchanan, Mich.

Filed Sep. 10, 1979, Ser. No. 74,229
Int. Cl.³ E02F *3/72*
U.S. Cl. 414—686 **10 Claims**

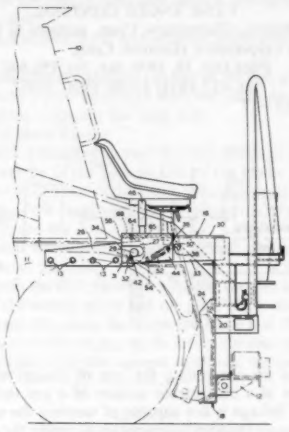
1. A device for connecting accessory apparatus to a traction vehicle including:

a first element including a first element end extending from said traction vehicle towards said apparatus and a channel element having opposed walls and wherein each of said opposed walls has a slot;

a second element including a second element end extending from said apparatus towards said traction vehicle;

said element ends having a selectively engaged position for connecting said apparatus to said traction vehicle;

a sleeve member slidably disposed over and operatively



connected to one of said elements for movement thereon, said sleeve member having a surface adapted for selective locking contact with at least one of said element ends for retaining said element ends in said engaged position; and

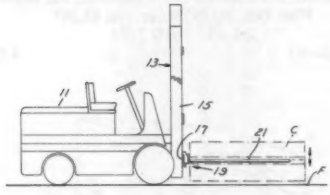
a transverse pin carried by said sleeve member and positioned for travel in said slots.

4,279,567

ATTACHMENT FOR LIFT TRUCK

Larry J. Thompson, Pembroke Pines, Fla., assignor to Equipment Company of America, Hialeah, Fla.

Filed Nov. 26, 1979, Ser. No. 97,464
Int. Cl.³ B66C *1/00*
U.S. Cl. 414—785 **16 Claims**



1. A lift attachment for a support having a lift frame and an upright lift bar with top and bottom edges vertically adjustable thereon;

said lift attachment comprising a hollow housing having a pair of upright spaced side walls for bearing against the lift bar;

a transverse top flange connecting the upper ends of said side walls and a transverse mount block located between the lower ends thereof;

there being a forwardly extending bore in said mount block;

a lift rod at one end projected into and secured within said block bore and extending forwardly of the housing for supporting coiled goods;

an elongated down-turned upper catch bar extending rearwardly of the top flange and adapted to be supportably mounted and suspended over the top edge of the lift bar;

a pair of opposed upright catch plates bearing against the housing side walls, secured thereto and depending there-

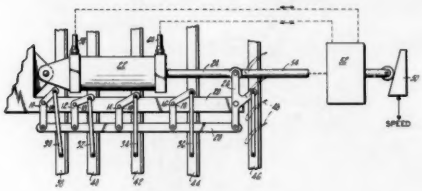
from; and p1 each of said catch plates having an up-turned lower catch extending rearwardly and adapted to retainingly engage the bottom edge of the lift bar.

4,279,568

VANE ANGLE CONTROL

Alan D. Munroe, Glastonbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Oct. 16, 1978, Ser. No. 951,894
Int. Cl.³ F01D *17/20;* **F02C** *7/057*
U.S. Cl. 415—17 **2 Claims**



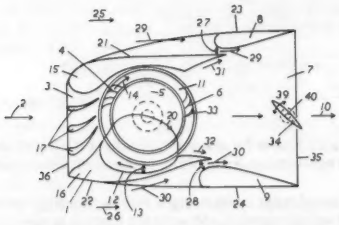
1. Means for controlling the rate of change of a variable stator vane of a compressor section of a gas turbine engine where the linkage is not capable of meeting the schedule for said vane angle changes necessary to maximize the aerodynamics of the system, said means including an actuator, a linkage system interconnecting said actuator and said variable vanes, control means responsive to at least one engine operating parameter for controlling said actuator, and additional means responsive soley to compressor speed for further controlling said actuator, said additional means including a cam having a given profile for producing a signal which has a preascertained nonlinear speed relationship of a given stroke of said actuator for a given speed of said compressor and said additional means readjusting said control means in response to said signal to achieve a change in the rate of change schedule of said stator vanes to meet said schedule.

4,279,569

CROSS-FLOW TURBINE MACHINE

Gary J. Harloff, 579 Carnival Dr., Pittsburgh, Pa. 15239

Filed Oct. 16, 1979, Ser. No. 85,267
Int. Cl.³ F01D *1/14*
U.S. Cl. 415—52 **4 Claims**



1. A cross-flow turbine machine for extracting kinetic energy from a fluid to provide for shaft power output; the machine is comprised of:

a. a cylindrical vaned rotor with axis of rotation perpendicular to the incoming flow;

b. inlet housing for controlling the fluid velocity vector into the inlet rotor vanes;

c. inlet guide vanes which curve in the direction of rotor rotation for controlling the flow velocity vector into the inlet rotor vanes;

d. flow controlling means consisting of housing shapes around the rotor outer periphery, vortex forming means, exit housing, and diffusing nozzles all of which extend the width of said rotor;

e. vanes of said rotor of the circular arc or aerodynamic design;

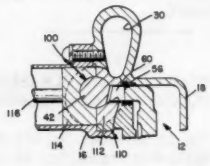
f. adjustable vane in the exit plane to control the flow rate and hence the rotational speed of the rotor and power output.

4,279,570

ENERGY TRANSFER MACHINE

Hans Egli, Santa Monica; Joe L. Byrne, and James H. Nancarrow, both of Torrance, all of Calif., assignors to The Garrett Corporation, Los Angeles, Calif.

Division of Ser. No. 892,368, Mar. 31, 1978, Pat. No. 4,197,051.
This application Jul. 25, 1979, Ser. No. 61,093
Int. Cl.³ F04B *5/00*
U.S. Cl. 415—53 T **11 Claims**



1. An energy transfer machine comprising: a housing having a fluid inlet and a fluid outlet generally adjacent to each other, and forming a generally toroidal volume between said inlet and outlet; a stator ring suspended within the toroidal volume and combining with said housing to define a generally circumferential flow passage having an annular cross section; a block seal having portions thereof interposed between said fluid inlet and outlet in said flow passage, to cause fluid flowing through said housing to flow substantially circumferentially about said housing through said flow passage, said block seal including a movable portion and a portion fixed with respect to said stator ring wherein said movable and fixed portions may be abutted to respectively block generally symmetrical halves of said annular cross section; a rotatable rotor including a cascade of blades operably disposed for energy transfer coaction with fluid in the flow passage and configured to cause the fluid to flow upon rotor rotation in a generally spiralling path about said stator ring; and means for controllably moving said movable portion of said block seal between a first position in abuttment with said nonmovable portion to block direct fluid flow between the fluid outlet and inlet to maintain a pressure gradient along the circumference of the flow passage, and a second position in non-abutting relationship with respect to said nonmovable portion to open the block seal to fluid flow to substantially remove the pressure gradient for unloading the machine, and thereby prevent the fluid from flowing in a generally spiralling path about said stator ring.

4,279,571

PITOT PUMP WITH FLUID LUBRICATED BEARINGS

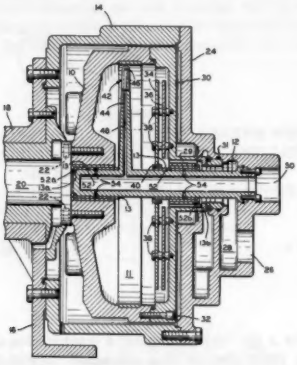
John W. Erickson, Huntington Beach, Calif., assignor to Kobe, Inc., Commerce, Calif.

Filed Oct. 1, 1979, Ser. No. 80,377
Int. Cl.³ F04D *1/14*
U.S. Cl. 415—89 **7 Claims**

1. In a centrifugal pump having a hollow casing defining a concentric fluid chamber, means for rotating said casing about the axis of said chamber, a stationary hollow discharge tube projecting within said casing in coaxial relationship to said axis of rotation, conduit means for supplying fluid to be pumped to said fluid chamber, whereby the fluid is rotated by said casing, a radially projecting, hollow arm secured to said hollow dis-

charge tube within said chamber, an opening in the end of said hollow arm disposed in facing relation to the rotating fluid, thereby inducing a high velocity fluid flow into said hollow arm and into the bore of said hollow discharge tube, the improvement comprising:

at least one bearing surface secured to the central portion of said casing, said surface being formed of material having a hardness greater than sand;



a second bearing surface on said stationary hollow discharge tube cooperating with said one bearing surface in bearing relationship, said second bearing surface having a hardness greater than sand; and

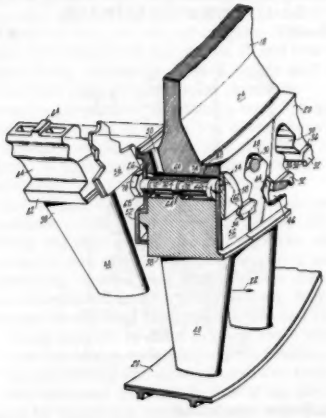
means for directing a portion of the fluid flow from said bore of said hollow discharge tube to said bearing surfaces, whereby such fluid lubricates said bearing surfaces.

4,279,572

SIDEPLATES FOR ROTOR DISK AND ROTOR BLADES

Peter R. Auriemma, Palm Beach Gardens, Fla., assignor to United Technologies Corporation, Hartford, Conn.

Filed Jul. 9, 1979, Ser. No. 55,562
Int. Cl.³ F01D *5/18, 5/30*
U.S. Cl. 416—220 R **11 Claims**



1. For a gas turbine engine having an axially extending flow path with an upstream end and a downstream end, a rotor assembly including:

a disk having an upstream face, a downstream face, and a plurality of circumferentially spaced slots extending therebetween;

a rotor blade at each slot, each blade having a platform section and a root section, wherein the root section engages the outer portion of the slot in the disk leaving a cavity at the base of said root section between the blade and the disk;

a rotor sideplate at each slot wherein each sideplate comprises

a first piece which engages the slot in the disk and extends outwardly into proximity with the platform section of the blade engaging the same slot;

a second piece having

a shank extending across the disk through the cavity inwardly of the root section of the blade;

a plate at one end of the shank which extends across one end of the cavity and across the interface between the disk and the first piece;

a means for urging the plate against the downstream face of the disk;

wherein the first piece is trapped in the slot by the plate of the second piece and the plate of the second piece closes the cavity between the blade and the disk;

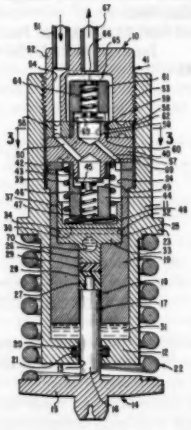
a means at each slot engaging the slot in the disk for restraining the rotor sideplate against rotational forces.

4,279,573

HIGH PRESSURE PUMP

Frank J. Rychlik, deceased, late of Chicago, Ill., and by Alan F. Rychlik, executor, 4 Hilltop Crt., Hawthorn Woods, Ill. 60141

Filed Jul. 27, 1979, Ser. No. 61,521
Int. Cl.³ F04B *43/02;* **F01B** *19/02*
U.S. Cl. 417—53 **22 Claims**



1. A fluid pump comprising:

a housing;

a plunger body in said housing and defining a pump chamber, a plunger bore opening into said pump chamber, and a radially extending planar shoulder therebetween;

a reciprocating plunger extending movably into the housing and having inner force-transmitting means slidably received in said plunger bore;

a diaphragm element formed of a yieldable material having an outer stem portion supportively slidably received in said bore inwardly of said force-transmitting means and engaged by said force-transmitting means, a transversely enlarged midportion extending inwardly from said stem portion and supportively slidably received in an outer portion of said pump chamber, and an inner portion extending inwardly from said midportion and having a pe-

ripheral portion sealingly bonded to said plunger body to define a diaphragm extending across said pump chamber;

means for urging said diaphragm outwardly to seat said midportion on said shouder; and

valve controlled passage means communicating with said pump chamber inwardly of said diaphragm for conducting fluid into said pump chamber as an incident of outward movement of said diaphragm and pumping the fluid outwardly from said pump chamber as an incident of inward movement of said diaphragm by said reciprocating plunger.

18. The method of forming a pump diaphragm in a pump body having a wall portion defining a valve chamber, comprising the steps of:

providing a release agent on a first portion of the wall portion while leaving an encircling second portion free of the release agent; and

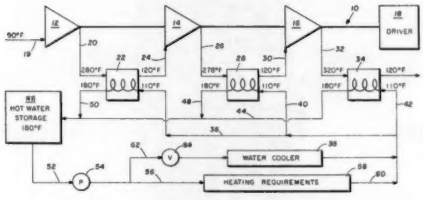
providing a body of flexible material in said pump chamber with portions thereof contacting said first and second wall portions, said flexible material comprising a material self-bonding to said first wall portion to effectively define a flexible diaphragm extending across the pump chamber sealingly peripherally bonded to the pump body, the portion of the body abutting said release agent being free to move in said pump chamber.

4,279,574

ENERGY RECOVERY SYSTEM

Fred K. Kunderman, Olean, N.Y., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Apr. 23, 1979, Ser. No. 32,089
Int. Cl.³ F04B *23/00*
U.S. Cl. 417—243 **3 Claims**



1. A system for recovering wasted energy from a multi-stage gas compressor or the like and including means for driving the compressor, said system comprising:

heat exchanger means having a water inlet and outlet operably connected with each compression stage of the compressor;

water conduit means operably connected to said heat exchanger means providing a parallel flow arrangement for the inlet and outlet of said heat exchanger means;

energy consumption means connected with said conduit means;

water pump means connected with said water conduit means for circulating water through said heat exchanger means and through said energy consumption means; and

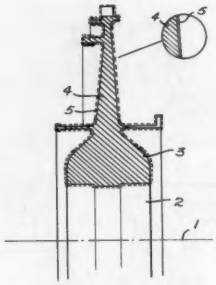
control means operably connected with said conduit means for selectively bypassing said energy consumption means and comprising valve means located in said conduit means for controlling the quantity of water flowing through said energy consumption means and water cooling means for decreasing the temperature of water flowing in said conduit means to said heat exchanger means.

4,279,575

TURBINE ROTOR

Peter Avery, Derby, England, assignor to Rolls-Royce Limited, London, England

Filed Oct. 24, 1978, Ser. No. 954,083
Claims priority, application United Kingdom, Nov. 19, 1977, 48270/77
Int. Cl.³ F01D *5/08*
U.S. Cl. 416—244 A **4 Claims**



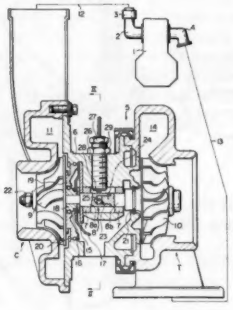
1. For a gas turbine engine, a machined-to-size superalloy turbine rotor disc having machined fatigue-prone surfaces intended to be subject to mechanical and heat stress cycles in said engine, said rotor disc having a coating on said machined fatigue-prone surfaces, said coating comprising a substantially air-impervious protective layer of a nonmetallic base material which substantially retains its integrity and adherence to said machined fatigue-prone surfaces of said superalloy turbine rotor disc without being integral therewith for a large number of said mechanical and heat stress cycles, whereby the fatigue life of said rotor disc is increased.

4,279,576

ROTATING SPEED DETECTING DEVICE OF A TURBOCHARGER

Hiroshi Okano, and Yoshihisa Gunji, both of Susono, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Jun. 28, 1979, Ser. No. 52,858
Claims priority, application Japan, Apr. 9, 1979, 54-42001
Int. Cl.³ F02B *37/00*; G01P *3/481*
U.S. Cl. 417—407 **6 Claims**



1. A turbocharger comprising:

a housing;

a shaft rotatably mounted on said housing and extending through said housing, said shaft having at its opposed ends a compressor wheel and a turbine wheel and having a circumferential outer wall which is located between said

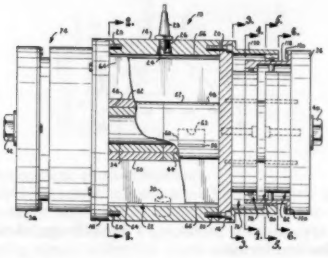
compressor wheel and said turbine wheel and forms at least one recessed portion thereon, said shaft comprises a first shaft portion connected to said compressor wheel and having a cylindrical hole at an inner end thereof, and a second shaft portion connected to said turbine wheel and having a reduced diameter portion fitted into said cylindrical hole, said recessed portion forming an air vent which is in communication with said cylindrical hole; and detecting means mounted on said housing and having a detecting portion which is arranged to face said recessed portion in the vicinity of the circumferential outer wall of said shaft.

4,279,577

ALTERNATING PISTON ROTARY ENGINE WITH LATCHING CONTROL MECHANISM AND LOST MOTION CONNECTION

John M. Appleton, 1032 Langland Ave., Muskegon, Mich. 49442

Filed Aug. 6, 1979, Ser. No. 64,178
Int. Cl.[3] F01C *1/00*; F02B *53/00*
U.S. Cl. 418—35 **6 Claims**



1. A rotary engine comprising:

a stationary housing presenting an interior chamber therein;

a shaft supported for rotation on said housing in extension through said chamber;

first and second coupling pieces sleeved on said shaft in said chamber, each coupling piece being rotatable relative to said shaft;

first and second hubs each having a pair of radial pistons thereon, said first and second hubs being sleeved on the respective first and second coupling pieces for rotation relative thereto with the pistons of said first and second hubs being alternately situated within said chamber to form four separate combustion chambers;

means for temporarily maintaining each hub against backward movement to permit one piston thereof to form a stationary abutment on one side of a firing chamber defined at a predetermined location within said interior chamber;

means for holding each hub against forward movement to maintain a drive piston thereof on the opposite side of said firing chamber as said one piston of the other hub approaches said drive piston to compress a fuel charge in said firing chamber, said holding means releasing the hub at a preselected rotative position of the shaft;

means for effecting combustion of the fuel charge in said firing chamber to effect a power stroke when said shaft reaches said preselected rotative position, said power stroke driving said drive piston away from the stationary abutment to rotate the hub of the drive piston;

means for translating rotation of said drive piston hub into rotation of said shaft during said power stroke; and

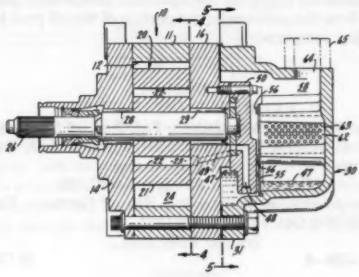
a lost motion connection between said first coupling piece and said first hub and between said second coupling piece and said second hub to provide rotary movement of each coupling piece in unison with the associated hub for a major portion of each revolution and independently of the associated hub for the remainder of each revolution, each lost motion connection being arranged to permit the piston forming said stationary abutment during one power stroke to move relative to the associated coupling piece across said firing chamber to the opposite side thereof to act as the drive piston for the next power stroke.

4,279,578

COMPACT OIL SEPARATOR FOR ROTARY COMPRESSOR

Tong S. Kim, Arlington Heights, and John S. Lee, Decatur, both of Ill., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed May 21, 1979, Ser. No. 41,215
Int. Cl.[3] F04C *29/02*
U.S. Cl. 418—97 **6 Claims**



1. A compact oil separator for separating oil entrained in the discharge gas produced by a rotary compressor, the separated oil forming an oil pool, comprising:

means for providing a first closed chamber of relatively small volume and having an inlet and an outlet which is generally planar and perpendicular to the surface of the oil pool;

a relatively small, generally planar gas permeable, oil separating element interposed in, and parallel to, the outlet of said first chamber;

means for providing a second closed chamber of relatively large volume, much greater than the volume of said first closed chamber, and with an oil reservoir for the oil pool at the bottom thereof, the planar outlet of said first chamber communicating with said second chamber, a predetermined portion of the second chamber's internal surface being generally planar and parallel to the plane of, and directly opposite from, the first chamber's outlet;

means for delivering the oil-laden discharge gas from the compressor into said first chamber at a relatively high velocity and against and through said oil separating element to said second chamber whereupon the discharge gas flows turbulently within said second chamber and bounces off of the chamber's internal surface, wherein at least some of the discharge gas flowing out of said first chamber flows horizontally in one direction, parallel to the surface of the oil pool, and impinges on said predetermined surface portion of said second chamber and then bounces back and flows in the opposite direction thereby following a hairpin-flow path, the entrained oil in the discharge gas separating out by gravity settling and by impinging on said oil separating element and on the second chamber's internal surface and draining into the oil pool in said reservoir;

a planar shield, within said second chamber and perpendicular to the surface of the oil pool and extending from above and into the oil pool and almost to the bottom of the reservoir thereby dividing a small clearance gap, for protecting and quieting a portion of the oil pool from the turbulent flow of the discharge gas to minimize the re-

entrainment of oil into the discharge gas and to minimize the re-entrainment of discharge gas into the oil pool,

the top of said planar shield being a substantial distance from the top of said second chamber to maximize the space in the second chamber through which the discharge gas flows while at the same time providing the desired isolation of the quiet portion of the oil pool from the turbulence of the gas flow,

the small clearance gap permitting oil flow to the protected portion of the oil pool while providing an oil seal along the shield's lower edge to prevent the discharge gas from flowing directly through the protected oil and re-entraining therein as gas bubbles;

a gas discharge outlet through which the separated, substantially oil-free discharge gas may exit from said second chamber;

and means for supplying the separated, substantially gas-free oil from the protected quiet portion of the oil pool to the rotary compressor.

4,279,579

EXTRUSION APPARATUS

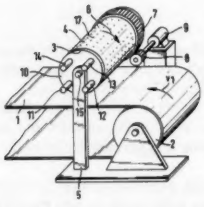
Reinhard Froeschke, Remshalden, Fed. Rep. of Germany, assignor to Sandvik Conveyor GmbH, Feilbach, Fed. Rep. of Germany

Filed Nov. 27, 1979, Ser. No. 97,750

Claims priority, application Fed. Rep. of Germany, Dec. 8, 1978, 2853054; Oct. 16, 1979, 2941802

Int. Cl.³ B29F *3/01*

U.S. Cl. 425—6 **10 Claims**



1. Apparatus for the extrusion of a flowable mass onto a moving conveyor comprising:

a first cylindrical container disposed above the conveyor for rotation about a longitudinal axis,

said first container including a plurality of first passages through the container periphery,

a second cylindrical container including means for longitudinally admitting into said second container the mass to be extruded and having a wall portion containing a plurality of second passages directed toward the conveyor and radially alignable with said first passages, said wall portion disposed at least closely adjacent said first container,

said first container being mounted for continuous 360° rotation about the longitudinal axis thereof relative to said second container such that relative rotation between said containers produces sequential misalignment and alignment of the first and second passages to enable the flowable mass to travel radially outwardly through the aligned passages and onto the conveyor, and

a spatula for removing excess mass from the perimeter of said first container, said spatula being directed toward said first container generally in the direction of rotation thereof, said spatula being tightly pressed against the perimeter of said first container in the region of said first passages to scrape excess mass into said first passages.

4. Apparatus for extruding drops of a flowable mass onto a conveyor, said apparatus comprising:

a first cylindrical container comprising a plurality of first passages,

a second cylindrical container disposed within said first container and including a plurality of second passages,

means for admitting flowable material into said second container,

means for producing relative rotation between said containers to periodically align said first and second passages to deposit drops of the flowable material through the passages and onto the conveyor,

said first and second containers being mounted to separate radially from one another during said relative rotation so as to form a negatively pressurized gap therebetween at a location opposite the location where the passages are periodically aligned, to suck-in excessive mass into said passages of said first container.

4,279,580

APPARATUS FOR MAKING BIAXIALLY STRETCHED TUBULAR FILMS

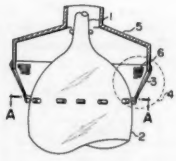
Kohtaro Hayashi, Yamanashi; Ko Morihara, Chibashi, and Kohji Nakamura, Chibaken, all of Japan, assignors to Chisso Corporation, Tokyo, Japan

Filed Dec. 19, 1979, Ser. No. 105,227

Claims priority, application Japan, Feb. 25, 1978, 53-159455

Int. Cl.³ B29D *23/04*; B29F *3/08*

U.S. Cl. 425—72 R **1 Claim**



1. An apparatus for producing a biaxially stretched tubular plastic film that includes

means to extrude the raw plastic film into the form of a tube,

means to increase the diameter of the extruded tube form its extruded diameter to an enlarged maximum diameter by the introduction of inflation air into the interior of said tube, and

a film take up means,

means for passing heated air over the exterior surface of said extruded tube,

the improvement consisting of a flexible flow guide arrangement for guiding said heated air uniformly over the exterior of said extruded tube over that area of the tube where the diameter is changing from its extruded diameter to its enlarged maximum diameter, said flexible flow guide arrangement comprising in combination:

(a) a circular hood extending annularly around said tube,

(b) a plurality of spaced apart roller supports fixed around the circumference of said hood and extending in the same direction as the direction of film movement, a roller attached to the tip end of each support, each roller being positioned to contact the bubble adjacent to the point where the extruded tube is first inflated to its maximum diameter, said roller supports having sufficient elasticity to permit said rollers to swing in a radial direction relative to the central axis of the extruded tube but being resistant to distortion in a circumferential direction, and

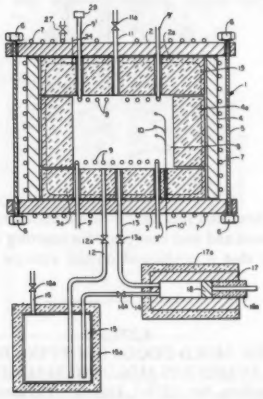
(c) a flexible and expandable cylindrical sheet of flexible material extending between said hood and locations on said roller supports that are close to said rollers,

whereby the distance between the exterior surface of the extruded sheet adjacent its point of maximum diameter and the interior of said flexible and expandable cylindrical sheet is maintained at an approximately constant and uniform value so as to thereby provide a uniform flow of heated air over the exterior surface of the extruded tube over that area of the tube where the diameter is changing from its extruded diameter to its enlarged maximum diameter.

4,279,581
HOT ISOSTATIC PRESS

Wolfgang Betz, Munich, Fed. Rep. of Germany, assignor to MTU Motoren-Und Turbinen-Union Munchen GmbH, Munich, Fed. Rep. of Germany

Filed Jul. 18, 1980, Ser. No. 170,208
Claims priority, application Fed. Rep. of Germany, Jul. 21, 1979, 2929695
Int. Cl.[3] B29C *3/00;* B30B *5/02, 11/00;* B22F *3/00*
U.S. Cl. 425—78 10 Claims



1. A hot isostatic press comprising:
(a) a working vessel defining a working chamber within it,
(b) means for supplying a molten metal working medium to the working chamber,
(c) heating means within the vessel and cooling means at the exterior of the vessel, and
(d) control means interconnecting the heating and cooling means and producing a continuous isothermal region completely surrounding the working chamber, the isothermal region being at the solidification temperature of the metal working medium,
whereby any potential leaks of molten metal working medium from the vessel are sealed by solidification of molten metal reaching the isothermal region.

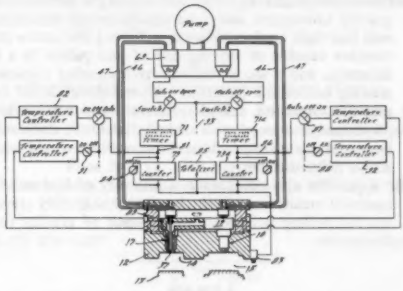
4,279,582
METHOD AND APPARATUS FOR INDIVIDUAL CONTROL OF INJECTION MOLD SHUT-OFF BUSHINGS

Jesus M. Osuna-Diaz, Rochester, Mich., assignor to Incoe Corporation, Troy, Mich.

Filed Apr. 2, 1979, Ser. No. 26,607
Int. Cl.[3] B29F *1/03, 1/05*
U.S. Cl. 425—159 8 Claims

4. In a mold die assembly adapted for use with a plastic injection molding machine and of a type having cavity means therein and a plurality of gates communicating with said cavity means, means for delivering melt material simultaneously to said gates for injection into said cavity means, gate pins for selectively opening and closing said gates, and fluid motors having piston means forming gate pin actuators, the improvement comprising connecting means fastening rearward end portions of said gate pins to respective gate pin actuators, and means ahead of said connecting means providing radial clearances between the said piston means and adjacent portions of said gate pins, said clearances forming heat insulating gaps and also accommodating relative lateral shifting between said gate pins and said piston means.

5. In a mold die assembly adapted for use with a plastic injection molding machine and of a type having cavity means therein and a plurality of gates communicating with said cavity means, means for delivering melt material simultaneously to said gates for injection into said cavity means, gate pins for selectively opening and closing said gates, and fluid motors having piston means forming gate pin actuators, the improvement comprising means forming access openings in said fluid

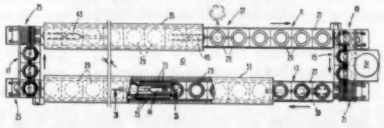


motors rearwardly of and in-line with said gate pins, and connecting means detachably fastening rearward end portions of said gate pins to respective gate pin actuators operable to permit adjustment of said gate pins longitudinally relative to said actuators and to permit removal of said gate pins rearwardly through the access openings of said fluid motors.

4,279,583
APPARATUS FOR THE AUTOMATED MANUFACTURE OF HEAVY CONCRETE OBJECTS

A. Eugene Martin, Sr., R.D. 1, P.O. Box 443, Narvon, Pa. 17555

Filed Mar. 17, 1980, Ser. No. 131,060
Int. Cl.[3] B28B *5/04;* B29C *5/10*
U.S. Cl. 425—253 14 Claims



1. An apparatus for the automated manufacture of poured concrete objects comprising:
means for pouring concrete molded objects,
means for curing said poured concrete objects, said curing means including a straight tunnel containing superheated steam,
a stripping station for stripping said cured concrete objects, and
means for conveying said objects, said conveying means passing by said pouring means and said stripping means and through said curing means,
wherein said conveying means is a roller conveyor system, said roller conveyor system traversing a rectangular path containing four right angle turns, wherein two opposing sides of said roller conveyor system rectangular path are relatively long and extend relatively close to one another,
further comprising a plurality of rectangular pallets, each said pallet bearing a mold for said poured concrete objects, said pallets being transferable around said roller conveyor system,
wherein said roller conveyor system includes two parallel extending relatively long roller conveyors and two parallel extending relatively short roller conveyors, said two pairs of roller conveyors forming legs of said rectangular path,
the apparatus further comprising four right angle roller turn

boxes, said right angle roller turn boxes forming the corners of said rectangular path,

wherein said pallets are disposed on said conveyor means and are adapted to be transferred around said two pairs of roller conveyors and said four right angle roller turn boxes forming said rectangular path with a constant orientation,

wherein said relatively long roller conveyor pairs are each gravity conveyors, and wherein the relatively short of said four right angle turn boxes includes a first active drive member capable of moving one of said pallets in a first direction, and a second active drive member capable of moving one of said pallets in a second direction 90° from said first direction, said first active drive member being positioned interlaced with said second active drive member and movable to positions above and below said second active drive member,

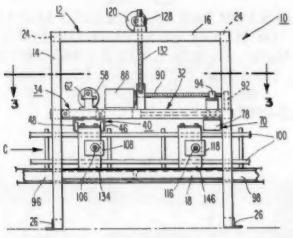
the apparatus also comprising a plurality of hydraulically operated means beneath the level of said gravity conveyors for pulling pallets along said pair of gravity roller conveyors.

4,279,584

AUTOMATIC FLASH REMOVING APPARATUS AND METHOD

Stanley F. Hawrylo, Reading, Pa., assignor to General Battery Corporation, Reading, Pa.

Filed Sep. 21, 1979, Ser. No. 77,669
Int. Cl.³ B29C *27/02, 17/12*
U.S. Cl. 425—307 **12 Claims**



2. An apparatus for automatically removing flash from a plastic weld bead formed by heat sealing a cover to a container of a lead-acid battery cell, said apparatus comprising:

a. flash removing means including at least one heated surface;

b. means for positioning said battery cell in an operating position adjacent said heated surface; and

c. means for moving said heated surface along said weld bead so that said heated surface slidingly engages said weld bead, whereby flash from said weld bead is smoothed out and pushed back against the weld bead, and thereby removed.

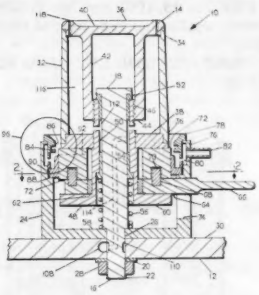
4,279,585

CUP FORMING MANDREL

Carl Arndt, Wauconda, and Martin Mueller, Wonderlake, both of Ill., assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Nov. 9, 1979, Ser. No. 92,893
Int. Cl.³ B29C *17/02;* B29G *7/00*
U.S. Cl. 425—403 **10 Claims**

1. A mandrel for forming a container including an elongated, centrally positioned column with attachment means at one end for coupling to a base plate, a slide member positioned in telescoping arrangement on the exterior of said column that is adapted for movement relative to and parallel with the longitudinal axis of said column, sleeve means attached to said slide member, said sleeve means defining the interior contour of a container, a plurality of radially movable segments adjacent one end of said sleeve means and coupled to said slide member for increasing the diametrical extent of the rim of a container, biasing means coupled to said segments for moving them in a



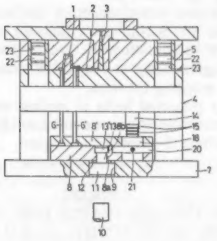
radial direction, and abutment means immobilized with respect to said column and said base plate for reacting the rim edge of a container that is positioned on the exterior of said sleeve means.

4,279,586

AUTOMATIC MOLD GOODS DROPPING DEVICE IN AN INJECTION MOLDING MACHINE

Yukio Yamashita, No. 3276-2, Hirooka, Fukuroi-shi, Shizuoka-ken, Japan

Filed Jul. 31, 1980, Ser. No. 174,111
Claims priority, application Japan, Aug. 9, 1979, 54/101426
Int. Cl.³ B29F *1/14*
U.S. Cl. 425—438 **2 Claims**



1. An automatic mold goods dropping device characterized in that a vibration-generating pin is provided for imparting vibrations to goods push-out pins when the mold is opened, said vibrations being transferred to said mold goods so as to push out said goods instantaneously to thus automatically throw down said goods.

4,279,587

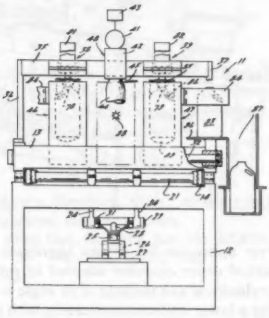
BLOW MOLDING MACHINE

Merritt W. Martin, Jr., Saline, Mich., assignor to Roman Machine Co., Detroit, Mich.

Division of Ser. No. 890,625, Mar. 20, 1978, Pat. No. 4,248,582.
This application Oct. 1, 1979, Ser. No. 80,460
Int. Cl.³ B29C *17/07*
U.S. Cl. 425—531 **4 Claims**

1. A blow molding machine comprising a base, an extruder mounted above said base at an extruding station and having means for continuously extruding a tubular parison, extruding parison severing means at said station, a table mounted on said base below said extruder for limited vertical movement be-

tween upper and lower positions, a pair of mold sections mounted on said table for transverse movement, means for moving said mold sections between clamped and unclamped positions, a blow pin mounted on said table and transversely spaced from said extruder at a blow molding station, means for moving said mold sections to said extruding station and moving the mold sections while at said extruding station to their clamped positions so as to engage a parison, means for moving said table from its upper to its lower position, means for severing said parison with said severing means and means for moving said mold sections toward said blow molding station, simultaneously with said table movement, means for thereafter



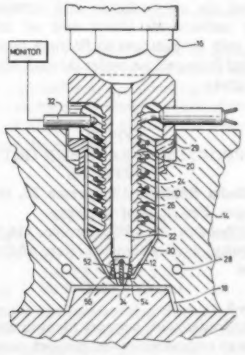
raising said table, means for causing said blow pin to expand said parison in said mold sections, means for moving said mold sections to their unclamped positions, means for returning said mold sections to said extruding station, said means for raising and lowering said table comprising two pairs of links at the opposite ends of said table, each pair of links having one end pivotally connected to said frame and the other end connected to said table, whereby said table will have slight forward and rearward movement during its raising and lowering motions, a pair of torsion bars secured between intermediate portions of each pair of links, two crank arms secured to said torsion bars, and reciprocating motor means connected to the outer ends of said crank arms.

4,279,588

HOT TIP SEAL

Jobst U. Gellert, 7A Prince St., Glen Williams, Ontario, Canada

Filed Jul. 28, 1980, Ser. No. 173,081
Claims priority, application Canada, Jul. 15, 1980, 356232
Int. Cl.³ B29F *1/03*
U.S. Cl. 425—568 **5 Claims**



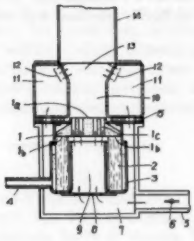
1. In an injection molding system having a nozzle seal seated between a nozzle and a cavity plate wherein melt flows from a central melt passage in the nozzle through the nozzle seal and a gate in the cavity plate into a cavity, the improvement wherein the seal has a generally cylindrical outer portion, an elongated central pin portion, and a plurality of ribs extending therebetween defining a number of apertures through which the melt flows around the central pin portion and into the cavity, the central pin portion having a first tip which extends downstream into the gate.

4,279,589

COMBUSTION DEVICE FOR LIQUID FUELS

Yoshimi Ohmukai, Hirakata; Takeshi Tomisawa, Katano, and Yoshitaka Kawasaki, Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 12, 1978, Ser. No. 914,856
Claims priority, application Japan, Jun. 15, 1977, 52-071301; Oct. 11, 1977, 52-122188
Int. Cl.³ F23D *13/12*
U.S. Cl. 431—328 **11 Claims**



1. A combustion device for liquid fuel comprising:
a porous body having a fuel receiving portion for containing the fuel in the form of a liquid phase and a fuel vaporizing portion continuous with the fuel receiving portion;
means for supplying the fuel to the fuel receiving portion of the porous body;
wall means for providing a main air chamber, a primary combustion space adjacent the fuel vaporizing portion of the porous body, said vaporizing portion being exposed to said primary combustion space, and for providing a secondary combustion space arranged downstream and distinctly separate from the primary combustion space;
air supply means for supplying primary air to the primary combustion space and secondary air to the secondary combustion space, said air supply means and said wall means serving to prevent contact between the secondary air and said porous body, and including separate passage means from said main air chamber to the primary and secondary combustion spaces for determining the ratio of the primary air to the secondary air supplied to said primary and secondary combustion spaces, respectively; and
air flow regulating means for adjusting calorific value by regulating at least the primary air of the air supply.

4,279,590

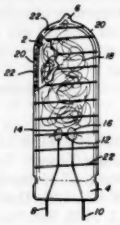
LAMP WITH PROTECTIVE COATING AND METHOD OF APPLYING SAME

Judith A. Dow, Boston, and Timothy Fohl, Carlisle, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Filed Jun. 23, 1976, Ser. No. 699,139
Int. Cl.³ F21K *5/00*
U.S. Cl. 431—360 **9 Claims**

1. A lamp having a light-transmitting envelope and an optically clear protective coating on the exterior surface of said envelope, said coating comprising a solvent-free photopolymer in combination with reinforcing fibers dispersed throughout

said photopolymer coating, the lengths of said fibers being between about the length of the maximum dimension of said lamp envelope and 1/16 inch, and said photopolymer comprising a UV curable synthetic polymer containing an organic



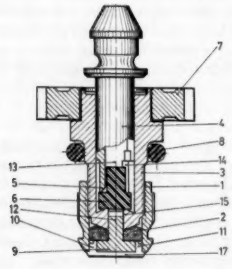
photoinitiator or photosensitizer and which has been rapidly cured by irradiation with a source of ultraviolet light for a period between about 0.1 second and 10 seconds, whereby a smooth coating surface is provided with minimized protrusion of fibers.

4,279,591

ADJUSTMENT GASIFICATION DEVICE FOR GAS LIGHTERS

Ricardo Aguirre, Sales y Ferrer, 7, Barcelona, Spain

Filed Dec. 7, 1978, Ser. No. 967,484
Claims priority, application Spain, Dec. 13, 1977, 232.677
Int. Cl.³ F23Q *2/16*
U.S. Cl. 431—344 **5 Claims**



1. Adjustable gasification device for a gas lighter, comprising:

a tubular cylindrical body for being contained in the body of a lighter; a burner located inside the tubular body;

an adjustment part inside the tubular body which is adjustable with respect to the tubular body and which is so placed and functions for controlling fluid flow to the burner;

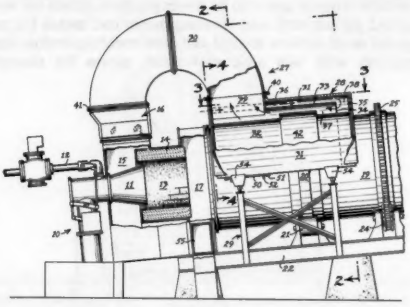
the tubular body having a lower end; a bottom integral with the tubular body for closing the lower end of the tubular body; the bottom having passages through it from outside the tubular body through which fluid enters the tubular body and communicates to the adjustment part and thereafter communicates to the burner.

4,279,592

HEAT EXCHANGER FOR PRE-HEATING INTAKE AIR FOR ROTARY DRYER

Herman L. Grant, Chattanooga, Tenn., assignor to Herman Grant Co., Inc., Chattanooga, Tenn.

Filed Jan. 2, 1980, Ser. No. 109,156
Int. Cl.³ F27B *7/36*; F24H *1/00*
U.S. Cl. 432—105 **8 Claims**



1. In a dryer apparatus for drying aggregate, including a rotary cylindrical dryer chamber adapted to rotate about its longitudinal cylindrical axis inclined at an angle to the horizontal, and having a lower end communicating with a combustion chamber having an air intake, a heat exchanger comprising:

(a) a pre-heating chamber having a longitudinal dimension and longitudinally spaced first and second end portions, said pre-heating chamber being transversely arcuate to fit over, and generally conform to, the cylindrical shape of the upper portion of said dryer chamber,

(b) means mounting said pre-heating chamber above and in heat transfer relationship with a portion of said cylindrical dryer chamber,

(c) a longitudinal, transversely arcuate, partition wall within said pre-heating chamber dividing said heating chamber into a radially outer air passage and a radially inner air passage,

(d) said outer and inner passages being in fluid communication adjacent said second end portion of said heating chamber,

(e) an air inlet in said first end portion of said pre-heating chamber communicating with one of said outer or inner air passages,

(f) an air outlet adjacent said first end portion of said pre-heating chamber in fluid communication with the other of said outer or inner air passages.

(g) duct means in fluid communication between said air outlet and the air intake to said combustion chamber, whereby ambient air enters said air inlet and moves through said air passages to become heated, and is then discharged from said air outlet through said duct means to said air intake.

4,279,593

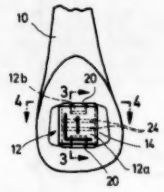
WIRE SUPPORTING MEANS FOR ORTHODONTIC PURPOSES

Friedrich-Wilhelm Röhlcke, Uferstrasse 23, D-7531 Kämpfelbach-Bilfingen, Fed. Rep. of Germany

Filed Jan. 23, 1980, Ser. No. 114,716
Claims priority, application Fed. Rep. of Germany, Feb. 1, 1979, 2903768
Int. Cl.³ A61C *7/00*
U.S. Cl. 433—8 **9 Claims**

1. An orthodontic wire support identification member for attachment to an orthodontic wire support, comprising a body, an attachment base on which said body is provided, and at least one channel in said body for accommodating a wire, character-

ized by said wire support identification member being releaseably attached to said body for removal after mounting of the orthodontic wire support on a tooth whereby said wire support identification member facilitates identification of different types of wire supporting wire supports, said identification member covering said channel when in position on said body.



4,279,594

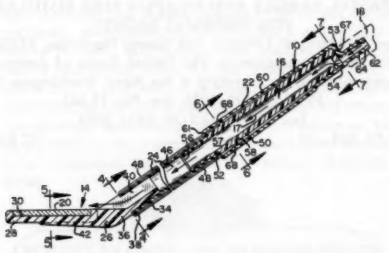
DENTAL HAND MIRROR

Martin A. Rigutto, Roseburg, Oreg., assignor to Reflek Products, Incorporated, Roseburg, Oreg.

Filed Oct. 18, 1979, Ser. No. 85,879

Int. Cl.³ A61C *1/00*

U.S. Cl. 433—31 **13 Claims**



1. A dental hand mirror unit comprising:

a generally hollow mirror assembly including a mirror end portion, coupling end portion and a handle portion interconnecting said mirror end portion and coupling end portion;

said mirror end portion including a mirror;

said mirror assembly defining a continuous uninterruptable airflow path from an inlet opening through said coupling end portion, through the interior of said mirror assembly and to an outlet at the mirror such that air entering said coupling end portion is distributed substantially over the mirror;

a cap section pivotally coupled to said coupling end portion for pivoting about the axis of said mirror assembly;

valve means responsive to the pivoting of said cap section about such axis for controlling the flow of air entering said coupling end portion and thereby the volume of air distributed over the mirror.

4,279,595

ARTICULATOR

John B. Della Croce, 450 Washington St., Freeland, Pa. 18224

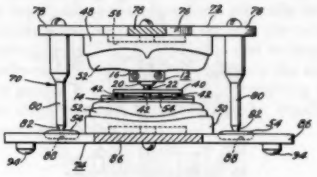
Filed Aug. 10, 1979, Ser. No. 65,482

Int. Cl.³ A61C *11/00*

U.S. Cl. 433—55 **5 Claims**

1. An articulator for constructing dentures, or the like, for use with a gothic arch tracing apparatus on which is formed a first set of three gothic arch traces from a patient's mouth, comprising:

first and second members having means for holding said members in spaced relationship, said means for holding being rigidly connected to one of said members and placeable against the other of said members, means for mounting a pair of dental casts between said members, one of said members accommodating an upper cast, the other member accommodating a lower cast, said tracing apparatus being removably mountable directly in said casts while in operable relationship; and,



means for forming a second set of three gothic arch traces, substantially identical to the first set on one of the first and second members, for controlling relative movement of said members within a three dimensional envelope of motion, in accordance with movement of said tracing apparatus whereby relative movement of said first and second members is controlled after removal of said tracing apparatus.

4,279,596

DENTAL HANDPIECE

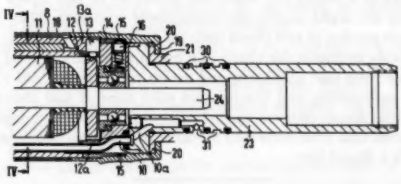
Walter Weber, Lorsch, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Dec. 10, 1979, Ser. No. 101,576

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1978, 2855719

Int. Cl.³ A61C *1/02*

U.S. Cl. 433—126 **11 Claims**



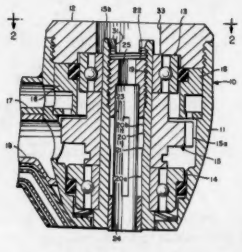
1. In a dental handpiece having a drive motor part with a motor having a drive shaft being mounted for rotation in a housing, a grip section with a head part having a socket for receiving and mounting a tool for rotation, said grip section being coupled on the housing and having a drive shaft section coupled to the drive shaft to transmit rotary motion from the motor to the socket, the improvements comprising a first sleeve surrounding said housing, means for holding the first sleeve on the housing, said means allowing removal of the sleeve but preventing unintentional axial slippage from the housing of the drive motor part and enabling rotation of the first sleeve on said housing around an axis extending parallel to the drive shaft of the drive motor part, said first sleeve having an end adjacent the grip section, said end having means for mounting the first sleeve for rotation relative to a second sleeve, said second sleeve being part of the grip section and having means forming an operational releasable connection between the head part and the second sleeve of the grip section, so that the parts can be separated without requiring assistance of tool.

4,279,597

CHUCK ASSEMBLY FOR DENTAL HANDPIECES

Phillip R. Grimm, Arlington Heights, Ill., assignor to American Hospital Supply Corporation, Evanston, Ill.

Continuation-in-part of Ser. No. 885,290, Mar. 10, 1978, abandoned. This application Sep. 12, 1979, Ser. No. 74,720
Int. Cl.[3] A61C *1/14*
U.S. Cl. 433—129 9 Claims



1. A positive-bur-gripping chuck assembly for a high-speed dental handpiece generally operable at rotational speeds in excess of 100,000 rpm, comprising a rotor having a bore therethrough and having upper, lower, and intermediate sections; said intermediate section providing an internal shoulder within said bore; a tubular chuck received within said bore and having an upper end portion, a deformable intermediate portion, and a cylindrical lower end portion; said upper section of said rotor and said upper end portion of said chuck threadedly engaging each other; means provided by said chuck for engaging a wrench for rotating and thereby axially displacing said chuck within said rotor bore; said chuck having a generally cylindrical bore therethrough for receiving the shank of a dental bur; said deformable intermediate portion of said chuck being provided with an external shoulder engagable with said internal shoulder of said rotor to cam said deformable intermediate portion inwardly into tight clamping engagement with the shank of a dental bur when said shoulders of said chuck and rotor are urged axially into engagement with each other; said lower portion of said chuck defining a pilot zone for snugly but slidably engaging the shank of a bur at a substantial axial distance from said shoulders; and means provided by said rotor for surrounding and bracing said pilot zone of said chuck to prevent forces directed against said bur from being propagated beyond said pilot zone into the zone of clamping engagement with a dental bur.

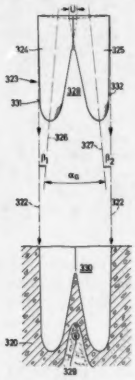
4,279,598

DENTAL HALF-IMPLANTS

Hans M. F. Scheicher, Rondell Neuwittelsbach 4, D 8000 Munich, 19, Fed. Rep. of Germany

Division of Ser. No. 811,224, Jun. 29, 1977, Pat. No. 4,197,645. This application Aug. 27, 1979, Ser. No. 69,646
Claims priority, application Fed. Rep. of Germany, Jul. 6, 1976, 2630400; Jul. 6, 1976, 2630408; Sep. 4, 1976, 2639887
Int. Cl.[3] A61C *8/00*
U.S. Cl. 433—173 12 Claims

1. An enossal dental half-implant suitable for use in at least two simultaneously drilled, identical, uniformly shaped, overlapping bores in a jaw bone, said implant having a downwardly tapering endostructure having an upper end and a lower end constructed as a dental root substitute comprising a unitary one-piece structure having at least two identical, uniformly shaped cone-like root portions which overlap at least at the upper end of said endostructure and which are separate from each other at the lower end of said endostructure, said upper end of said endostructure having a uniformly lobed cross-sectional configuration lying in a plane having the greatest cross-sectional area of the endostructure while the entire cone-like root portions are disposed completely within a projection of



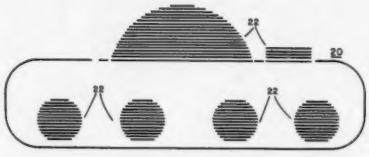
said greatest cross-sectional area in a direction perpendicular to said plane of said upper end.

4,279,599

THERMAL TARGET AND WEAPON FIRE SIMULATOR FOR THERMAL SIGHTS

Albert H. Marshall, Orlando, and George Derderian, Maitland, both of Fla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 30, 1979, Ser. No. 71,142
Int. Cl.[3] F41G *3/26;* F41J *1/00*
U.S. Cl. 434—21 17 Claims



1. A target which simulates the thermal signature of a preselected object, comprising:

a planar member having a plurality of surface portions on a first surface of said member, selected to be distinguishable by their thermal emissivity,

the first surface portion of said member having a substantially smooth surface and the second surface portion of said member having a relatively coarse texture rendered within the surface of said member, that correspond in relative size, placement and emissivity to the less thermally emissive and more thermally emissive areas, respectively, on the surface of said preselected object.

4,279,600

ROD WRENCHING TABLE

Robert M. Levy, and P. Jeffrey Matire, both of Guymon, Okla., assignors to Sam's Well Service, Inc., Guymon, Okla.

Filed Oct. 10, 1979, Ser. No. 83,292
Int. Cl.[3] G09B *9/00*
U.S. Cl. 434—219 8 Claims

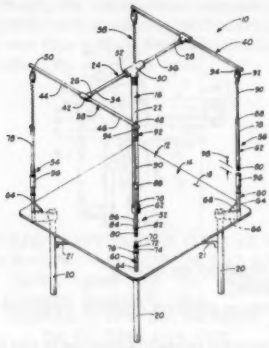
4. A training apparatus for training persons to assemble threaded rods to be installed in a well, said training apparatus comprising:

a frame having a lower frame portion and an upper frame portion;

a first threaded rod means connected to said lower frame portion and having an upper end extending upwardly therefrom;

a second threaded rod means having a downwardly extending lower end; and

support means for supporting said second threaded rod means from said upper frame portion so that said lower end of said second threaded rod means may be engaged with and threadedly connected to said upper end of said



first threaded rod means, said support means including resiliently extendable means including a coil spring, connected between said upper frame portion and an upper end of said second threaded rod means, for holding said lower end of said second threaded rod means suspended above said upper end of said first threaded rod means and for allowing said second threaded rod means to be engaged with said first threaded rod means by an application of a downward force upon said second threaded rod means.

4,279,601

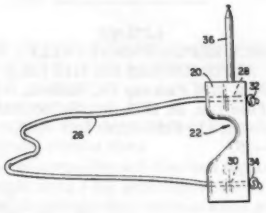
ARCHERY TRAINER AND EXERCISE DEVICE

Gabriel Cobelli, 84 Townline Rd., Nanuet, N.Y. 10954

Filed Jan. 21, 1980, Ser. No. 113,529

Int. Cl.³ A63B *21/02*

U.S. Cl. 434—247 **1 Claim**



1. An archery trainer and exercise device comprising a gripping handle having an upper and lower surface with a gripping curve having an upper and lower end formed therein between the upper and lower surface for holding the archery trainer and exercise device during use, said gripping handle having a first upper hole formed therethrough located between the upper surface and the upper end of said gripping curve and extending horizontally from the front to the rear of said gripping handle and a second lower hole formed therethrough located between the lower surface and the lower end of said gripping curve and extending horizontally from the front to the rear of said gripping handle, a continuous elastic cord having a first end passing through the upper hole in said gripping handle and secured forward of said gripping handle and a second end passing through said lower hole in said gripping handle and secured forward of said gripping handle to prevent the elastic cord from being pulled through the holes when in use, and a sighting rod mounted on the upper surface of the gripping handle and extending vertically upward therefrom to permit a student archer to grip the gripping handle at the gripping curve between the horizontally extending first and second holes in the gripping handle while orienting the gripping handle with the upper hole vertically above the lower hole and pull the elastic cord rearward in a generally horizontal direction toward the user while sighting over the vertically upwardly extending sighting rod toward a real or imaginery target, whereby the student archer can simulate the use of a bow to learn proper bow hand position and sighting to the target while simultaneously strengthening the muscles required for accurate shooting.

4,279,602

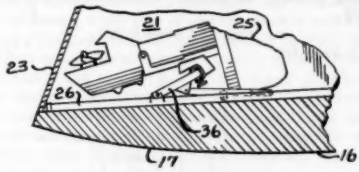
APPARATUS FOR MOUNTING AN OUTBOARD MOTOR

Hobart L. Alter, Capistrano Beach, Calif., assignor to Coast Catamaran Corporation, Oceanside, Calif.

Filed Aug. 7, 1979, Ser. No. 64,402

Int. Cl.³ B63H *21/26*

U.S. Cl. 440—63 **1 Claim**



1. A motor mounting apparatus for mounting an outboard motor on a boat, the apparatus comprising:

(a) a pair of guide tracks adapted to be mounted on a boat;

(b) a carriage slidably mounted in the guide tracks and movable between a storage position and a use position;

(c) a motor mounting plate pivotally mounted on the carriage and being pivotable between a storage position and a use position; and

(d) over center link means for preventing movement of the motor mounting plate from the use position to the storage position, the over center link means including a first link pivotally connected to the motor mounting plate and a second link pivotally connected to the carriage, the first and second links being pivotally connected to each other.

4,279,603

FLEXIBLE PADDLE WHEEL STRUCTURE

Colin H. Harcourt, and D. Roy Barker, both of Calgary, Canada, assignors to Hoverlift Systems Ltd., Calgary, Canada

Filed Oct. 19, 1979, Ser. No. 86,307

Int. Cl.³ B63H *1/04*

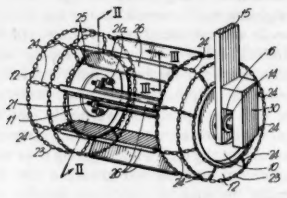
U.S. Cl. 440—90 **14 Claims**

1. A flexible paddle wheel structure, comprising:

two axially spaced wheel-like members, each having a flexible rim;

a plurality of pairs of radially spaced flexible transverse members extending between the rims and connected thereto, the pairs spaced around the axis of the wheel-like members;

a separate and distinct flexible paddle member extending between the transverse members of each pair, to form a



plurality of flexible radially extending paddles between the wheel-like members.

4,279,604

FORK TRUCK

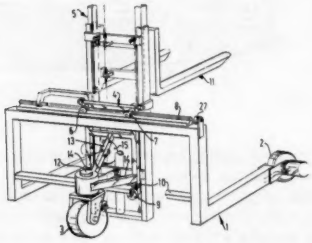
Hessel Kooi, Vrouwenparochie, and Hendrik de Vries, No. 28, Hemmemaweg, St. Annaparochie, both of Netherlands, assignors to Kooi B.V., Vrouwenparochie and de Vries, Hendrik, St. Annaparochie, both of, Netherlands

Filed Jun. 14, 1979, Ser. No. 48,524

Claims priority, application Netherlands, Jun. 23, 1978, 7806778

Int. Cl.³ B66F 9/06

U.S. Cl. 414—667 **5 Claims**



1. In a fork lift truck of the type having a frame provided with a pair of laterally spaced ground engaging wheels at the forward end thereof defining respective forwardly disposed supporting points;

mast assembly means movably mounted on said frame in spaced relation behind said wheels for lateral shifting relative to said frame, said mast assembly means including an upright mast, a load carrier vertically movable on said mast and projecting forwardly therefrom and means for vertically moving said load carrier, and means for laterally shifting said mast assembly means on said frame, the improvement which comprises:

ground engaging wheel means disposed behind said mast assembly means for supporting said frame and mast assembly means, through said mast assembly means, at a third support point which defines the apex of an imaginary triangle of which the base is defined between said forwardly disposed supporting points and within the plan view area of which imaginary triangle the center of gravity of the fork lift truck and a load supported by said load carrier must remain in order to prevent tipping of the truck, said ground engaging wheel means including force transferring means carried by said mast assembly means and constituting said third support point whereby said apex is laterally shiftable with the mast assembly means.

4,279,605

FRONT DERAILLEUR FOR A BICYCLE

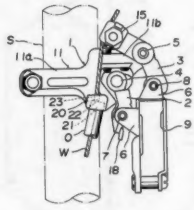
Tetsufumi Egami, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

Filed Aug. 28, 1979, Ser. No. 70,650

Claims priority, application Japan, Sep. 13, 1978, 53-126654[U]; Oct. 26, 1978, 53-147828[U]

Int. Cl.³ F16H 7/22, 11/08

U.S. Cl. 474—82 **7 Claims**



1. A front derailleur comprising:

a base member;

a pair of linkage members pivotally supported to said base member;

a movable member pivotally supported to said linkage members and having a chain guide;

a holder for a control wire provided at one of said linkage members; and,

a support for an outer sheath guiding said control wire provided at said base member, said support being mounted to a mounting nose extending from said base member and having a socket for receiving therein one end of said outer sheath, said mounting nose having an insertion bore for said control wire, said socket having at the bottom thereof an insertion bore for said control wire, and a guide slot directly connected to and in continuation of said insertion bores and extending radially thereof, said guide slot having a width substantially equal to the diameter of said insertion bores extending away from said linkage members and in the same direction of swinging movement of the linkage members and being larger in length than the maximum wire deflection created when a control wire having no outer sheath is used to operate said derailleur.

4,279,606

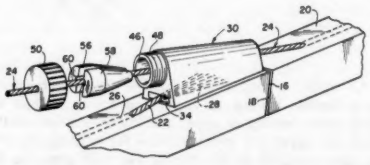
EMERGENCY REPLACEMENT PULLEY BELT FOR AUTOMOBILES OR THE LIKE

Norman H. Berg, 3295 Parkway Dr., Baldwin, N.Y. 11510

Filed Dec. 26, 1979, Ser. No. 107,032

Int. Cl.³ F16G 3/16, 7/04, 7/06

U.S. Cl. 474—257 **3 Claims**



1. An emergency replacement pulley belt for autos or the like comprising a selected length of a pulley belt body of elastomeric construction material having opposite ends in initial unattached relation, a cable embodied lengthwise of said pulley belt body having a size in relation thereto resulting in a selected end-connecting length of said cable extending from one said end of said pulley belt body, a cable-gripping member bounding an open-ended compartment connected adjacent

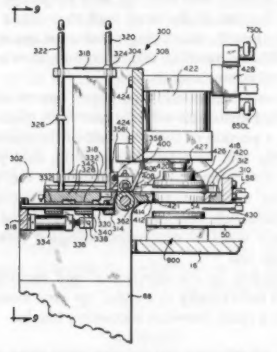
said other end of said pulley belt body, said end-connecting cable length having an operative position projected through said open-ended compartment of said cable-gripping member so as to form said pulley belt body into a closed loop incident to the placement thereof in entrained relation about a pair of spaced apart pulleys, and wedge means having an operative position in said compartment in gripping engagement with said end-connecting cable length and oriented so as to be wedged more firmly thereagainst responsive to pulling force exerted on said cable, whereby the contemplated emergency use of said pulley belt contributes to completing the connection of the two ends thereof and thus to the emergency installation of said pulley belt without the use of any tools.

4,279,607

DISC FEEDING APPARATUS FOR USE WITH A PACKAGING MACHINE OR THE LIKE

Raymond C. Taylor, Kansas City, Mo., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 6, 1979, Ser. No. 55,231
Int. Cl.³ B31B *1/44, 1/06*
U.S. Cl. 493—167 **12 Claims**



1. Apparatus for sequentially feeding generally circular discs from a stack of said discs to a predetermined position separate from said stack, comprising:

a disc feed support frame;

means on said disc feed support frame for holding a stack of said generally circular discs;

carriage means carried by said disc feed support frame and reciprocable along a line generally normal to said stack of said generally circular discs between a first position proximate to said means for holding a stack of said generally circular discs and a second position nearer to said position separate from said stack for sequentially moving each successive generally circular disc nearest said carriage means from said stack toward said position separate from said stack;

nip roller means journaled on said disc feed support frame intermediate said carriage means and said position separate from said stack for engaging each successive generally circular disc from said carriage means when said carriage means is in the second position thereof; and

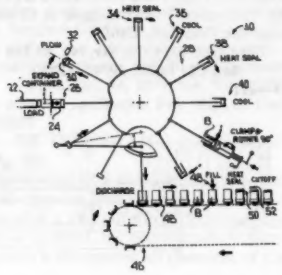
roller drive means drivingly engaging said nip roller means for rotating said nip roller means at a speed sufficient to convey each generally circular disc engaged by said nip roller means to said position separate from said stack.

4,279,608

BAG BOTTOM FORMING MACHINE AND TRANSFER APPARATUS

Jack R. Evers, Torrance, Calif., assignor to Developak Corporation, Redondo Beach, Calif.

Filed Sep. 17, 1979, Ser. No. 76,447
Int. Cl.³ B31B *1/32*
U.S. Cl. 493—247 **20 Claims**



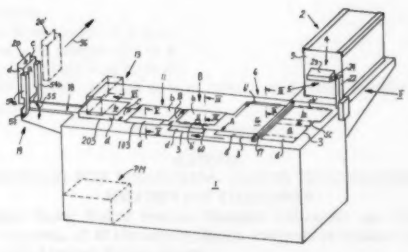
1. An apparatus for shaping a sealed tube bottom into a flat bag bottom and delivering the shaped bag to take-away means, said apparatus comprising a turret, means mounting said turret for indexing movement about a fixed generally horizontal axis, said turret having a plurality of stations, each of said stations including a mandrel assembly, each mandrel assembly including an inner mandrel, and an outer mandrel, a plunger for each outer mandrel and extending into the interior of said turret through said inner mandrel, and cam means cooperating with an inner end of said plunger for positioning said outer mandrel relative to said inner mandrel, and orienting means for engaging the bag while on said mandrel assembly and rotating the bag about the axis of said mandrel assembly.

4,279,609

METHOD AND APPARATUS FOR MAKING COLLAPSIBLE CONTAINERS

Nils von Wichert, Glinde, and Dieter Schwenke, Hamburg, both of Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

Filed Jan. 11, 1980, Ser. No. 111,263
Claims priority, application Fed. Rep. of Germany, Jan. 17, 1979, 2901571
Int. Cl.³ B31B *1/26, 1/80*
U.S. Cl. 493—276 **11 Claims**



1. In a method of converting foldable blanks of the type having a plurality of neighboring panels including two outermost panels into tubular containers, the steps of transporting the blanks seriatim along a predetermined path through a plurality of successive stations which include a row of deforming stations and an additional station and are defined by progressively narrower portions of a substantially flat one-piece

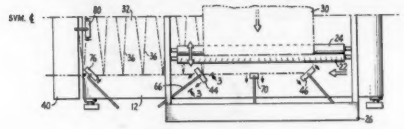
pattern; converting consecutive blanks into flat tubular preforms including folding selected panels of consecutive blanks about the adjacent portions of the pattern and connecting the outermost panels of consecutive blanks for articulate movement relative to each other at said deforming stations; and expanding the flat preforms at said additional station.

4,279,610

CROSS-LAPPED WEB FORMING SYSTEM

Imants Reba, Vancouver, Wash., assignor to Crown Zellerbach Corporation, San Francisco, Calif.

Filed Oct. 22, 1979, Ser. No. 86,858
Int. Cl.³ B65H *29/46, 45/20*
U.S. Cl. 493—411 **5 Claims**



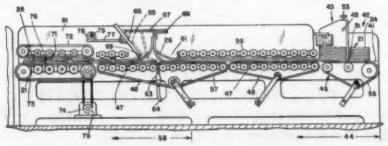
1. In apparatus for forming a layered, cross-lapped web from web material having a predetermined width, said apparatus including conveyor means having a web support surface and moveable in a predetermined direction and cross-lapping means disposed above said conveyor means and reciprocally moveable transverse to said predetermined direction across said conveyor means for folding said web material along fold lines extending across the width thereof in said predetermined direction and positioning a folded, layered cross-lapped web formed from said web material on said conveyor means web support surface, the improvement comprising at least a pair of Coanda nozzles positioned over said conveyor means web support surface, said pair of nozzles being disposed along at least one of the fold lines extending in said predetermined direction and spaced from one another a distance substantially equal to said web material width, each of said nozzles including an elongated foil element defining a generally smoothly curved fluid flow attachment surface and means defining a restricted opening for directing fluid under pressure to said fluid flow attachment surface whereby said fluid will attach to said surface and flow along said surface, each of said pair of nozzles having the elongated foil element thereof angularly oriented with respect to one another and with respect to said predetermined direction to create divergent fluid flows, said cross-lapping means delivering said web material to said nozzles with said fold line extending between said nozzles in said predetermined direction and said divergent fluid flows laterally spreading said web material to its full width along said fold line.

4,279,611

APPARATUS AND METHOD FOR FOLDING BLANKS WITH AN UNUSUALLY ELONGATED WALL

Raymond A. Labombarde, D. W. Hwy. South Box 787, Nashua, N.H. 03061, and Robert A. Tremblay, 167 Derry Rd., Hudson, N.H. 03051

Filed Jan. 7, 1980, Ser. No. 109,980
Int. Cl.³ B31B *1/36, 1/96*
U.S. Cl. 493—418 **11 Claims**



9. The method of folding flat box blanks of the type having front and side walls of relatively short length, but having a combined bottom wall and rear wall projecting from the center of the bottom of the front wall to create a blank of relatively long length, occupying substantial space on the paper line of a folding machine and, therefore, slowing production, said method comprising the steps of;

feeding said blanks onto the paper line of said machine in shingled formation with the rear walls of each blank overlying a portion of the rear wall of the preceding blank;

advancing said shingled blanks along said paper line and while so advancing, backfolding each successive individual rear wall in a backfolding zone, the backfolding of a preceding rear wall causing the backfolding of the overlying rear walls of succeeding shingled blanks in domino fashion; and

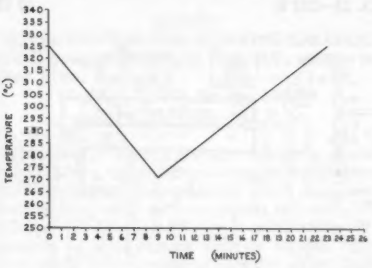
then speeding up the advance of said backfolded, shingled blanks individually in a speed up zone along said path to create a space between successive blanks.

4,279,612

PRODUCTION OF STABILIZED ACRYLIC FIBERS

Richard D. Winters, Elizabethton, Tenn., assignor to Great Lakes Carbon Corporation, New York, N.Y.

Filed Apr. 23, 1980, Ser. No. 143,083
Int. Cl.[3] D06C *7/04;* D01F *9/22*
U.S. Cl. 8—115.5 3 Claims



1. A process for rapidly thermally stabilizing a bundle of acrylic fibers in an oxidizing atmosphere, under a tension at least sufficient to prevent significant fiber shrinkage, comprising the steps of:

(a) directly exposing the bundle of fibers to a heat treatment temperature in the range of about 2° C. to about 8° C. below a predetermined temperature at which fusion of a segment of said bundle of fibers is observed to occur;

(b) immediately decreasing the heat treatment temperature of the bundle of fibers at a predetermined rate wherein said temperature is constantly maintained at about the maximum which said bundle of fibers can tolerate without fusing as the fiber density is simultaneously and progressively increased until a critical density is attained at which said bundle of fibers will tolerate an increase in temperature without fusing; and then

(c) immediately increasing the heat treatment temperature of the bundle of fibers at a predetermined rate wherein said temperature is constantly maintained at about the maximum which said bundle of fibers can tolerate without fusing as the fiber density is simultaneously and progressively increased to the level at which said bundle of fibers is capable of sustaining carbonization at a temperature of at least about 800° C. in a non-oxidizing atmosphere.

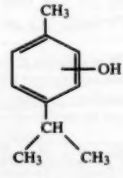
4,279,613

METHOD AND COMPOSITION FOR HAIR COLORING

Eugen Konrad, Darmstadt, Fed. Rep. of Germany, and Herbert Mager, Fribourg, Switzerland, assignors to Wella Aktiengesellschaft, Darmstadt, Fed. Rep. of Germany

Filed Sep. 10, 1979, Ser. No. 74,406
Claims priority, application Fed. Rep. of Germany, Sep. 20, 1978, 2840830
Int. Cl.[3] A61K *7/13*
U.S. Cl. 8—407 12 Claims

1. A composition for oxidative coloring of hair, comprising an oxidizable developer-coupler combination comprising a 1-methyl-4-isopropyl-hydroxybenzene of the formula



as coupler substance and a developer therefor.

8. A composition as defined in claim 1, wherein at least one directly-applicable coloring agent selected from the group consisting of Diamond Fuchsin, Leather Ruby HF, 2-nitro-1,4-diaminobenzene, Acid Brown 4, Disperse Red 15, 1,4,5,8-tetraaminoanthraquinone and 1,4-diamino-anthraquinone is added.

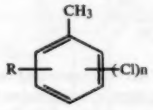
4,279,614

PROCESS FOR DYEING POLYESTER-CONTAINING MATERIALS

Hans Schulze, Cologne; Klaus Walz, Leverkusen; Karlhans Jakobs, Bergisch-Gladbach, and Günther Boehmke, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 14, 1979, Ser. No. 93,951
Claims priority, application Fed. Rep. of Germany, Dec. 1, 1978, 2852027
Int. Cl.[3] D06P *3/872, 3/84, 3/82, 1/90*
U.S. Cl. 8—533 4 Claims

1. In the dyeing of a polyester and wool-containing fibre material wherein the fibre material is dyed in an aqueous dyebath containing a dyestuff for the polyester and a carrier for the polyester dyestuff, the improvement comprises employing as said carrier a chlorinated alkylbenzene of the formula



in which

n=1–3 and

R=H or alkyl with 1–4 carbon atoms.

4,279,615

PROCESS AND AGENT FOR THE COLORING OF TEXTILES OF POLYESTER FIBERS

Sienling Ong, Hofheim am Taunus, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 27, 1980, Ser. No. 134,445
Claims priority, application Fed. Rep. of Germany, Mar. 29, 1979, 2912497
Int. Cl.[3] D06P *3/52*
U.S. Cl. 8—582 17 Claims

1. A process for the coloration of polyester fiber materials which comprises contacting said materials with an aqueous composition containing an organic pigment and/or a vat dyestuff and a compound of the formula (I)

$$C_nH_{2n+2-m}[O(CH_2—CH(CH_3)O)_{x/m}]_m \quad (I),$$

wherein

n is an integer of 2 to 6,

m is an integer of 1 to 6,

x is a number of 20 to 60,

with the proviso that m is at most n, and fixing the dye by heating.

4,279,616

METHOD FOR MEASURING BLOOD COAGULATION AND DEVICE THEREFOR

Yukio Saito; Koichi Sekiya; Masaaki Takahashi, and Seigo Akiyama, all of Hiromachi, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

Filed Aug. 29, 1979, Ser. No. 70,797
Claims priority, application Japan, Aug. 30, 1978, 53-106566
Int. Cl.[3] G01N *33/16;* G06F *15/42*
U.S. Cl. 23—230 B 7 Claims

1. A method of measuring blood coagulation factor, comprising:

feeding a voltage ET proportional to coagulation time T of

a sample plasma to a dividend input terminal of an analog divider;

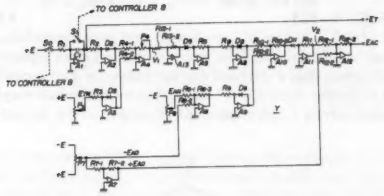
feeding a voltage ETn corresponding to normal plasma coagulation time to a divisor input terminal of said analog divider;

feeding the output of said analog divider to an analog log converter;

feeding the output of said log converter to a bipolar analog coefficient circuit in which the coefficient is B;

feeding the output of said coefficient circuit to an input of an analog antilog circuit;

adding a voltage EAn corresponding to activity or concentration of normal plasma to one input terminal of an analog adder;



adding a voltage EAo corresponding to residual activity or residual concentration of coagulation factor defect plasma or diluted solution to another input terminal of said analog adder;

feeding the outputs of said antilog circuit and adder to an input of an analog multiplier; and

feeding the output of said adder to a minuend input terminal of an analog subtractor, while feeding said voltage EAo corresponding to said residual activity or residual concentration to a subtrahend input terminal of said analog subtractor;

the output EA of said subtractor being a value proportional to the activity or concentration corresponding to the sample plasma coagulation time T.

4,279,617

IUMMUNOASSAY INVOLVING AGGLUTINATION

Pierre L. Masson, Brussels; Cesar L. Cambiaso, Kraainem, both of Belgium; Floris De Steenwinkel, Leidschendam, Netherlands, and Adrian E. Leek, Bucks, United Kingdom, assignors to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed Feb. 26, 1980, Ser. No. 124,849

Claims priority, application United Kingdom, Feb. 26, 1979, 06686/79

Int. Cl.³ G01N *33/54, 33/56, 33/58*

U.S. Cl. 23—230 B **15 Claims**

1. A method of testing a liquid for an Ab or Ag therein, which comprises:

(a) mixing the liquid with a first microscopic or sub-microscopic particulate reagent which binds with the Ab or Ag under assay to form a complex therewith;

(b) adding to the mixture from step (a) a second different microscopic or sub-microscopic particulate reagent which binds with the complex formed in step (a) to form an agglutinate, but does not bind with free first particulate reagent; and

(c) selectively assaying the unagglutinated first or second particulate reagent and thereby determining the presence and/or amount of the Ab or Ag under assay.

4,279,618

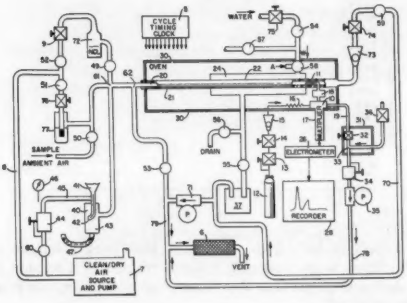
METHOD AND APPARATUS FOR ANALYSIS OF TOTAL ATMOSPHERIC SULFURIC ACID CONTENT

James D. Barden, Chester, Md., assignor to Versar, Inc., Springfield, Va.

Filed Jun. 3, 1980, Ser. No. 155,986

Int. Cl.³ G01N *25/68, 21/72*

U.S. Cl. 23—232 R **12 Claims**



1. The method of collecting atmospheric sulfuric acid contained in an ambient air stream containing interfering sulfur dioxide and ammonia species, and analyzing sulfuric acid content after eliminating the interfering species, comprising the steps of:

(a) mixing the air stream with a clean air stream entraining dilute hydrochloric acid;

(b) heating the mixed air streams to a temperature above the vaporization point of sulfuric acid;

(c) passing the air streams over a surface cooled to a temperature below the dew point of sulfuric acid to condense the sulfuric acid;

(d) subsequently heating said surface to a temperature above the vaporization point of sulfuric acid while flushing it with a clean carrier gas substantially saturated with water vapor to entrain the sulfuric acid; and

(e) analyzing the carrier gas and entrained sulfuric acid while integrating the total quantity of sulfur contained therein.

4,279,619

FUEL FOR INTERNAL COMBUSTION ENGINES

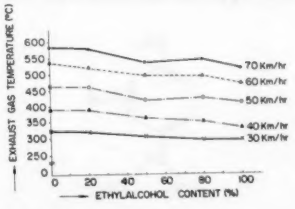
Kunihiko Tsuzuki; Norio Ogasawara, and Shigeo Ema, all of Hamamatsu, Japan, assignors to Suzuki Jidosha Kogyo Kabushiki Kaisha, Shizuoka, Japan

Continuation-in-part of Ser. No. 877,447, Feb. 13, 1978, abandoned. This application Sep. 5, 1979, Ser. No. 72,759

Claims priority, application Japan, Jul. 7, 1977, 52-81216

Int. Cl.³ C10L *1/02, 1/04*

U.S. Cl. 44—56 **12 Claims**



1. Fuel for an internal combustion engine consisting essentially of a mixture of gasoline and an alcohol selected from the

group consisting of ethyl alcohol, methyl alcohol and mixtures of ethyl alcohol and methyl alcohol, the alcohol constituting 75 to 85 volume % of the mixture and the gasoline consisting essentially of 3 to 11 carbon atom alkanic, aromatic, and cycloalkanic hydrocarbons, the aromatic hydrocarbons constituting 35 to 45 weight % of the gasoline.

4,279,620

NOVEL PROCESS FOR TREATING GASAHOL

William M. Sweeney, Wappingers Falls, N.Y., assignor to Texaco Inc., White Plains, N.Y.

Filed Apr. 7, 1980, Ser. No. 138,028
Int. Cl.³ C10L *1/12*
U.S. Cl. 44—56 **11 Claims**

1. The method of treating a charge containing at least one fuel selected from the group consisting of water-containing gasoline and water-containing gasohol which comprises

contacting said charge water-containing fuel with a substantially saturated aqueous solution of calcium chloride in the presence of solid calcium chloride thereby forming a multi-phase system including (i) a first phase containing substantially dry fuel and (ii) a second phase containing substantially saturated aqueous solution of calcium chloride; and

recovering said first phase containing substantially dry fuel.

4,279,621

POLYAMINES MIXTURE FOR STABILIZING CERTAIN HYDROCARBONS AGAINST OXIDATION

Robert E. Reusser, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 14, 1978, Ser. No. 942,216
Int. Cl.³ C10L *1/22*; C07C *87/20*
U.S. Cl. 44—72 **14 Claims**

1. A stabilized hydrocarbon containing composition stabilized against oxidation, the said composition have incorporated therewith a stabilizing amount of an oxidation inhibiting polyamine mixture consisting essentially of the heavy by-product residue obtained upon distillation of a polyamine obtained from the hydrogenation of branched-chain aliphatic dinitriles containing from about 7 to 30 carbon atoms per molecule, said dinitriles being obtained by the reaction of an olefin and a dinitrile, said mixture being the sole oxidation inhibiting agent in said composition.

8. A method for stabilizing a hydrocarbon containing composition by incorporating therewith a stabilizing amount of an oxidation inhibiting polyamine mixture consisting essentially of the heavy byproduct residue obtained upon distillation of a polyamine obtained from the hydrogenation of branched-chain aliphatic dinitriles containing from about 7 to 30 carbon atoms per molecule, said dinitriles being obtained by the reaction of an olefin and a dinitrile, said mixture being the sole oxidation inhibiting agent in said composition.

4,279,622

GAS-GAS QUENCH COOLING AND SOLIDS SEPARATION PROCESS

Henry B. Jones, and Randlow Smith, both of Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

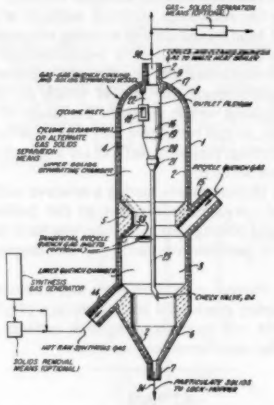
Division of Ser. No. 57,228, Jul. 13, 1979. This application Dec. 12, 1979, Ser. No. 102,715
Int. Cl.³ C10J *3/46*
U.S. Cl. 48—197 R **15 Claims**

1. A process for quench cooling a hot gas stream comprising H_2, CO, CO_2, H_2O, and containing entrained solid matter and slag as produced by the partial oxidation of solid carbonaceous fuel and for separating therefrom at least a portion of said solid matter and slag comprising:

(1) passing said hot gas stream through a first gas inlet means into a lower chamber of a closed vertical cylindrical thermally insulated pressure vessel comprising said lower chamber which is coaxial with the central vertical axis of said pressure vessel and in communication with a coaxial upper chamber, said lower and upper chambers being connected by a coaxial choke-ring passage;

(2) simultaneously passing an oppositely directed stream of cooled and cleaned recycle quench gas through a second gas inlet means which is coaxial with said first gas inlet means and into said lower chamber producing a turbulent mixture of gases when said streams impinge, wherein molten slag entrained in said hot gas stream cools below the initial deformation temperature, settles out by gravity, and falls to the bottom of said lower chamber;

(3) passing the mixture of gases from the lower chamber upwardly through said choke-ring into said upper chamber in counter-flow with slag droplets;



(4) separating solid matter from said gas mixture in said upper chamber and removing said solid matter from said vessel by way of an outlet in the bottom of said lower chamber;

(5) removing cooled and cleaned gas from said upper chamber and discharging said gas through an outlet at the top of said vertical vessel; and

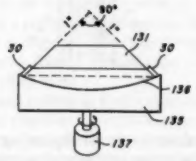
(6) introducing a portion of said cooled and cleaned gas stream from (5) with further cooling and with or without further cleaning downstream into the lower chamber in (2) as at least a portion of said recycle gas.

4,279,623

METHOD OF CONTOURING THE RECORDING SURFACE OF A MAGNETIC HEAD TRANSDUCER

John Bealle, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 4, 1979, Ser. No. 45,351
Int. Cl.³ B24B *1/00, 13/00*
U.S. Cl. 51—283 R **8 Claims**



1. A method of shaping respective recording/playback surfaces of a plurality of magnetic head transducers to form contoured surfaces having a predetermined curvature, said method comprising the steps of:

(a) providing holder means and attaching a first head transducer to a first relatively flat surface of said holder means so that a major surface of said first head transducer is parallel to the first relatively flat surface;

(b) attaching a second head transducer to a second relatively flat surface of said holder means so that a major surface of said second head transducer is parallel to the second relatively flat surface, said second relatively flat surface lying in a plane which is substantially orthogonal to a plane in which the first relatively flat surface lies;

(c) providing positioning means having a concave surface with a radius of curvature equivalent to the predetermined curvature for receiving said holder means with said first and second head transducers attached thereto;

(d) disposing the recording/playback surfaces of said first and second head transducers in abutting relationship with said concave surface and at a predetermined distance apart which is substantially equal to the hypotenuse of an isoceles right triangle, the legs of which are each of a length equivalent to the radius of curvature of the concave surface, so that respective axes which are orthogonal to said recording/playback surfaces are also orthogonal to said concave surface;

(e) providing shaping means having a concave surface with a radius of curvature equivalent to the predetermined curvature and placing said recording/playback surfaces in contact with said concave surface of said shaping means; and

(f) providing relative motion between said concave surface of said shaping means and said recording/playback surfaces so that said recording/playback surfaces are contoured to the predetermined curvature.

4,279,624

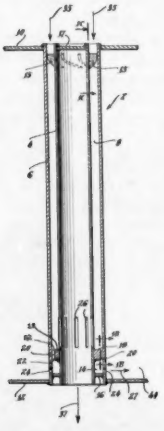
DOWNFLOW SEPARATOR METHOD AND APPARATUS

Joseph G. Wilson, 15 Weston Hill Rd., Riverside, Conn. 06878

Continuation of Ser. No. 947,173, Sep. 28, 1978, abandoned. This application Nov. 8, 1979, Ser. No. 92,343

Int. Cl.³ B01D *45/12*

U.S. Cl. 55—1 **35 Claims**



1. A centrifugal separator for separating particulate matter from downflowing gases, said separator comprising:

a vertical outer tube having an inner and outer surface,

a vertical inner tube having an inner and outer surface,

said inner tube being of a diameter of less than that of said outer tube, said inner tube being positioned within said outer tube and extending in the longitudinal direction within said outer tube with said outer surface of said inner tube and said inner surface of said outer tube defining an annular channel therebetween,

said inner tube having a plurality of longitudinally extending slots therein in the lower portion of said inner tube for providing communication between said annular channel and the space within said inner tube, said slots being dimensioned and positioned so that gas swirling in circumferential direction around said inner tube in said annular channel and then turning inwardly and entering through said slots into said inner tube experiences a sudden change from a circumferential direction of flow to a radially inward direction of flow,

first closure means for sealing the top of said inner tube, and second closure means positioned proximate to the bottom of said annular channel for sealing the bottom of said annular channel, said inner tube being closed at the top and open at the bottom and said annular channel being open at the top and closed towards the bottom,

means positioned and arranged with respect to said annular channel for swirling a stream of gas containing particulate matter flowing down in said annular channel above said slots,

said first and second closure means defining a path of flow of said stream of swirling gas in said annular channel, said gas swirling down through said annular channel above said slots, and then suddenly flowing inwardly through said slots into said inner tube, and down through the open bottom of said inner tube,

said particulate matter in said swirling gas in said annular channel being separated from said gas by the force of centrifugal force thrusting said particulate matter outwardly against said inner wall of said outer tube (i) when said gas begins swirling in said annular channel and (ii) as said gas swirls down through said annular channel above said slots, and (iii) a further separation of particulate matter occurring as a result of said sudden change in direction of flow of said swirling gas upon entering said slots, said separated particulate matter remaining in said annular channel for subsequent removal along with bleed gas from the lower portion of said channel, and said swirling gas stream exiting from said separator by flowing downwardly and out through the bottom of said inner tube.

23. A method of separating particulate matter from gases, said method using a vertical outer tube and a vertical inner tube having a plurality of axially extending slots therein, said inner tube being positioned concentrically within said outer tube such that a vertical annular channel is defined between the outer surface of said inner tube and the inner surface of said outer tube, said method including the steps of:

introducing a stream of gas containing particulate matter into said annular channel,

causing said stream of gas to swirl in a circumferential direction around said inner tube as the stream flows downwardly in said annular channel such that larger particles of particulate matter are thrust against the inner surface of said outer tube by centrifugal force of said swirling gas,

allowing the swirling gas to flow downwardly in said annular channel for causing additional particles to be flung against the inner surface of the outer tube such that said additional particles are separated from the stream of gas,

thereafter directing the flow of said swirling gas inwardly through said slots in said inner tube passing into the interior of said inner tube such that said swirling gas experiences a sudden change in direction of flow in entering said slots so that further particles are separated and temporarily remain in said annular channel while said swirling gas enters the interior of said inner tube,

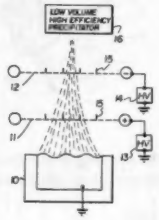
discharging said stream of gas downwardly from the interior of said inner tube and

removing the separated particulates together with bleed gas from the lower end of said annular channel.

4,279,625
ELECTROSTATIC SYSTEM FOR CONCENTRATING, PROPELLING AND COLLECTING AIRBORNE PARTICULATES FOR INDUSTRIAL FURNACES

Ion I. Inculet; George S. P. Castle, and John L. Sullivan, all of London, Canada, assignors to Canadian Patents & Development Ltd., Ottawa, Canada

Filed Sep. 26, 1979, Ser. No. 79,077
Int. Cl.³ B03C *3/12*; F23J *15/00*; C21B *7/22*
U.S. Cl. 55—131 **2 Claims**

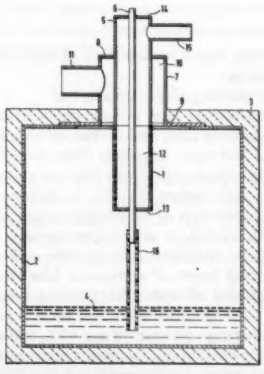


1. An electrostatic system in combination with an industrial furnace for concentrating and propelling airborne particulates from the said furnace to a collection area comprising:
(a) a first corona injection and repelling open grid electrode positioned directly above the furnace in the path of the particulates rising from the furnace,
(b) means for applying a high positive or negative voltage in the range of 7 to 200 kV to the first electrode,
(c) a second corona injection and repelling open grid electrode positioned directly above the first electrode,
(d) means for applying a high voltage opposite in polarity to the voltage applied to the first electrode and in the range 7 to 200 kV to the second electrode, and
(e) means for grounding said furnace.

4,279,626
APPARATUS FOR SEPARATING THE GAS WHICH EVAPORATES DURING THE TRANSFER OF LOW-BOILING LIQUIFIED GASES

Jürgen Buchmüller; Peter Nobis, both of Krefeld, and Wolfgang Volker, Dusseldorf, all of Fed. Rep. of Germany, assignors to Messer Griesheim GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed May 28, 1980, Ser. No. 154,064
Claims priority, application Fed. Rep. of Germany, Jun. 7, 1979, 2923078
Int. Cl.³ B01D *19/00*
U.S. Cl. 55—204 **6 Claims**

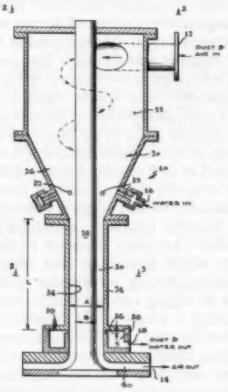


1. In an apparatus for separating the gas which evaporates during the transfer of low-boiling liquified gases, including a porous hollow body with a supply line for the gas-liquid mixture to be separated which is arranged inside an insulated vessel which receives the gas and liquid phase emerging from the porous hollow body and which is provided with discharge lines for the gas and liquid phase, the improvement being said porous hollow body having a cylindrical shape, said porous hollow body concentrically surrounding the discharge line for the liquid phase, said porous hollow body being installed in the cover of said insulated vessel by means of a pipe and a non-porous cylindrical extension, and annular space being formed between said pipe and said cylindrical extension, and the discharge line for the gas phase communicating with said annular space.

4,279,627
FINE PARTICLE SEPARATION APPARATUS

Donald G. Paul, and Lester P. Berriman, both of Irvine, Calif., assignors to Dresser Industries, Inc., Dallas, Tex.

Continuation of Ser. No. 931,604, Aug. 7, 1978, abandoned. This application Sep. 13, 1979, Ser. No. 75,343
Int. Cl.³ B01D *45/16, 45/10, 47/10*
U.S. Cl. 55—238 **7 Claims**



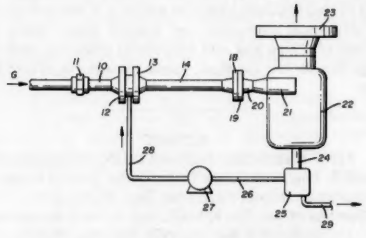
1. A particle separation apparatus, comprising:
(a) a vertically oriented substantially cylindrically-shaped chamber enclosing an axially extending concentric member to define an annular fluid flow path through said chamber, said concentric member having means for breaking up boundary layer flow therealong;
(b) an inlet adjacent the upper end of the chamber through which a stream of particle-laden gas is introduced into the flow path;
(c) means for establishing a helical flow of the gas stream through the annular flow path;
(d) means for introducing downwardly flowing liquid into the chamber downstream from the gas inlet in the form of a film of said liquid substantially coating the inner wall of the chamber in a portion of the annular flow path through which the gas is circulating for entrainment of dust particles centrifugally forced into contact with the layer of liquid on the inner wall;
(e) first and second outlets in fluid communication with the interior of said chamber downstream from said portion of the annular flow path therein for first removing the particle-liquid mixture and subsequently removing relatively dust-free gas from said apparatus, and wherein the first outlet includes a slot located around the conduit wall, and means for applying a lower pressure to the slot for withdrawing particle-laden liquid therethrough from the chamber.

4,279,628

APPARATUS FOR DRYING A NATURAL GAS STREAM

Robert L. Wymer, Poland, Ohio, and Perry Prater, Shreveport, La., assignors to Energy Synergistics, Inc., Daingerfield, Tex.

Filed Dec. 31, 1979, Ser. No. 108,504
Int. Cl.³ B01D 53/18
U.S. Cl. 55—238 5 Claims



1. In an apparatus for drying a natural gas stream comprising interconnecting tubular members defining a generally horizontally extending continuous fluid flow path and a centrifugal separator tangentially connected at one end thereof, the improvement comprising an adapter conduit fluidly connected to one tubular member and having a first inner diameter at one end thereof, a nozzle chamber connected to said adapter at said first inner diameter, said nozzle chamber being adjacent the other end of said interconnected tubular members and means for introducing gas to be dried into said adapter conduit via said other end of said tubular members, a nozzle block removably positioned in said nozzle chamber and having a jet forming opening centrally thereof, said jet forming opening being connected directly to said adapter conduit and having a uniform inner diameter which is substantially smaller than said adapter conduit first inner diameter to define an orifice-like opening into which fluid from said adapter passes, said jet forming opening having an annular passageway separated therefrom, a diverging conduit fluidly connected to said orifice-like opening to receive fluid therefrom, and a plurality of individual nozzles positioned circumferentially in said nozzle block diverging conduit downstream of said orifice-like opening and communicating with said annular passageway, said nozzles being oriented to inject fluid into fluid flowing out of said orifice-like opening directed downstream toward an extension of an axial center line of said orifice-like opening, said nozzle block disposed in said nozzle chamber, an adjacent downstream portion of said interconnecting tubular members defining a mixing chamber which is fluidly connected to said diverging conduit and has an internal diameter essentially equal to the largest portion of said diverging conduit so that the area of said mixing chamber is substantially greater than the area of said orifice-like opening and means for supplying triethylene glycol under pressure greater than said gas stream to said annular passageway in said nozzle block for injection by said individual nozzles into the gas stream leaving said orifice-like opening.

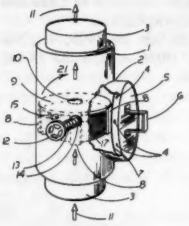
4,279,629

FIRE PREVENTION FILTER FOR CHIMNEYS AND THE LIKE

Donald S. Simms, 43 Lincoln St., Greenfield, Mass. 01301

Filed Feb. 14, 1980, Ser. No. 121,364
Int. Cl.³ B01D 39/12, 46/42
U.S. Cl. 55—307 14 Claims

1. An assembly for eliminating the buildup of creosote in chimneys comprising a hollow enclosure means having means at its top and bottom so as to be adapted to be connected between a stove pipe and a chimney, a door means located in said hollow enclosure, a damper plate adjacent said door means having a plurality of legs extending downwardly therefrom, a filter having a plurality of openings therein and being supported by said legs, an opening in the middle area of said damper plate, lift pads mounted on said damper plate to space said filter from said damper plate, said openings in said filter



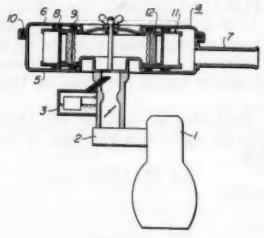
being aligned with the opening in said damper plate, and means for rotating said damper plate within said hollow enclosure means.

4,279,630

AIR CLEANING MEANS FOR INTERNAL COMBUSTION ENGINE

Yasuhiko Nakamura, Toyohashi, and Yoshio Yamakawa, Toyota, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Mar. 6, 1979, Ser. No. 17,958
Claims priority, application Japan, Mar. 7, 1978, 53/28993[U]
Int. Cl.³ B01D 50/00; F02M 33/02
U.S. Cl. 55—316 4 Claims



1. Air cleaning means for use with an internal combustion engine comprising:

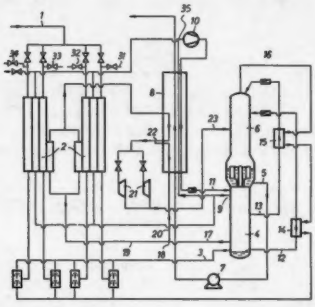
a sucked air cleaning filter element; and

a fuel vapor adsorbing filter element mounted independently of and separately from said sucked air cleaning filter element, said fuel vapor adsorbing filter element including a filter material layer containing fibers of active carbon for adsorbing fuel vapors thereon, a metallic reinforcing member, a plurality of reinforcing layers of nonwoven fabric each located on one of opposite sides of said filter material layer, said filter material layer and said plurality of reinforcing layers of nonwoven fabric being formed with a plurality of apertures extending therethrough so that said filter material layer will have a percentage of voids in the range between 10 and 40%, and an additional layer of nonwoven fabric mounted between said metallic reinforcing member and one of said plurality of reinforcing layers located inwardly of said filter material layer.

4,279,631
PROCESS AND APPARATUS FOR THE PRODUCTION OF OXYGEN BY TWO-STAGE LOW-TEMPERATURE RECTIFICATION OF AIR

Werner Skolaude, Grünwald, Fed. Rep. of Germany, assignor to Linde Aktiengesellschaft, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 712,263, Aug. 6, 1976, abandoned. This application Oct. 20, 1976, Ser. No. 734,090
Claims priority, application Fed. Rep. of Germany, Aug. 6, 1975, 2535132
Int. Cl.[2] F25J 3/02
U.S. Cl. 62—29 9 Claims



1. In a process for the production of oxygen by two-stage low-temperature rectification of air wherein the air is cooled in a primary heat exchanger, and the product oxygen is withdrawn from the low-pressure stage in the liquid phase, pumped to a higher pressure and warmed by heat exchange in a secondary heat exchanger separate from the primary heat exchanger with a high-pressure gaseous stream fed to the high-pressure stage, said high-pressure gaseous stream, during the heat exchange in the secondary heat exchanger, having a substantially higher pressure than the high-pressure stage, the improvement which comprises withdrawing a second gaseous stream as the compensating stream from the high-pressure stage, warming said compensating stream at least partially in the primary heat exchanger countercurrently to the entering air, recooling the warmed compensating stream by heat exchange with the product oxygen in said secondary heat exchanger separate from the primary heat exchanger, said warmed compensating gas during the heat exchange having substantially the same pressure as the high-pressure stage, both said high-pressure gaseous stream to the high-pressure stage and said warmed compensating stream being employed in separate conduits and cocurrently to vaporize the liquid oxygen product countercurrently in said secondary heat exchanger, and turbine-expanding resultant warmed compensating stream.

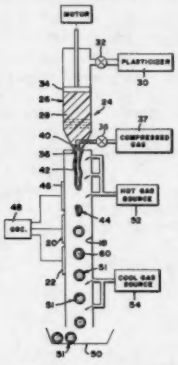
4,279,632
METHOD AND APPARATUS FOR PRODUCING CONCENTRIC HOLLOW SPHERES

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; Taylor G. Wang, Glendale, and Daniel D. Elleman, San Marino, both of Calif.

Filed May 8, 1979, Ser. No. 37,072
Int. Cl.[3] C03B 19/10
U.S. Cl. 65—21.4 8 Claims

5. A method for forming a hollow shell with concentric inner and outer surfaces, comprising:

applying acoustic vibrations through a gaseous medium to a detached hollow body which lies in the gaseous medium free of contact with a solid, and which is at a temperature

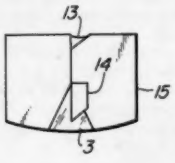


at which the material of the walls of the body can flow to provide said concentric inner and outer spherical surfaces.

4,279,633
METHOD OF PRODUCING MAGNETIC HEAD

Kazuo Nakamura, Toyonaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Mar. 18, 1980, Ser. No. 131,457
Int. Cl.[3] G11B 5/42
U.S. Cl. 65—41 1 Claim



1. A method of producing a magnetic head comprising the steps of: preparing a gapped bar constituted by a pair of rectangular parallelopiped magnetic core blocks having coil-winding grooves and jointed to each other though a medium of a non-magnetic spacer of a predetermined thickness, said gapped bar having a plurality of non-magnetic glass mold parts disposed to limit at least a front portion of said gaps to a predetermined track width; forming a head core from said gapped bar by cutting said gapped bar at said glass mold parts at a predetermined angle to the longitudinal axis of the gapped bar and then finishing the cut surface; and subjecting the head core thus formed to an annealing which is effected at a temperature higher than the deformation point of the glass constituting said mold glass part.

4,279,634
DAM CONSTRUCTION FOR CONTROLLING TIN CURRENTS IN A FLOAT GLASS CHAMBER

Gabriel M. Sisoler, Sterling Heights; Vincent L. Spade, Chelsea; James P. Sowman, Farmington Hills; Larry J. Casterwiler, Taylor, all of Mich., and Bernard Puma, Nashville, Tenn., assignors to Ford Motor Company, Dearborn, Mich.

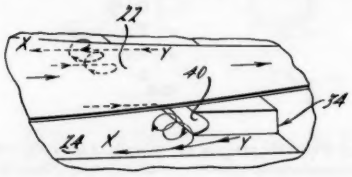
Filed Dec. 3, 1979, Ser. No. 99,766
Int. Cl.[3] C03B 18/18
U.S. Cl. 65—182.3 3 Claims

1. In a float glass chamber in which molten tin is confined in a refractory structure to define a molten tin bath having a depth dimension as well as dimensions extending along the

length and the width of said float glass chamber, said molten tin bath providing an upper surface over which molten glass may be processed to form a glass ribbon, said molten glass being received on said molten tin bath in a hot entry end of said float glass chamber and thereafter being moved lengthwise along said molten tin bath towards a cold exit end of said float glass chamber to solidify and form a ribbon of glass;

the improvement comprising:

a dam member mounted below the surface of said molten tin bath at a position along the length of said float glass chamber to separate hot tin in said hot entry end of said float glass chamber from cold tin in said cold exit end of said float glass chamber, said dam member having an upstream face facing said hot entry end of said float glass chamber and a downstream face facing said cold exit end of said



float glass chamber, said dam member having formed on its upstream face a concave surface so constructed and arranged that molten tin currents engaged by said concave surface of said upstream face of said dam member will be redirected into an outwardly directed flow toward the sides of said float glass chamber, said dam member terminating at locations spaced from said side walls of said float glass chamber so that molten tin from said cold exit end of said float glass chamber may move therepast toward said hot entry end of said float glass chamber, said outwardly directed flows of molten tin from said upstream face of said dam member substantially mixing with said returning cold tin at an area along the sides of said float glass chamber at a location away from said ribbon of glass forming on said molten tin bath.

4,279,635

PROCESS FOR TREATING PHOSPHATIC CLAY SUSPENSIONS

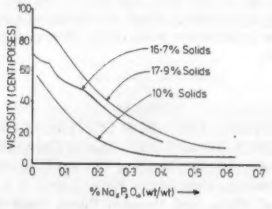
David Krofchak, 160 Torbay Rd., Markham, Ontario, Canada (L3R 1G6)

Filed Jun. 27, 1979, Ser. No. 52,376

Claims priority, application United Kingdom, Jul. 18, 1978, 30236/78

Int. Cl.³ C05B *21/00*

U.S. Cl. 71—4 Z **13 Claims**



1. A process for treating thickened phosphatic clay suspensions produced in the processing of phosphate ore by water beneficiation, said suspensions having a solids content of from about 5% to about 30%, said process comprising mixing a sufficient amount of deflocculating agent with the suspension to cause deflocculation of the suspension to an extent sufficient to reduce the viscosity of the sludge to a value enabling the deflocculated suspension to be readily pumped from one location to another, said deflocculating agent comprising an alkali metal phosphate pumping said deflocculated suspension of reduced viscosity from said one location to another, and subsequently mixing with the deflocculated suspension an additive compound comprising an alkaline earth metal oxide or hydroxide in an amount sufficient to cause the formation of large silicate molecules with resultant gelling and setting of the sludge into an inert solid material.

11. A process according to claim 1 wherein, after mixing with the additive compound and before gelling and setting, the suspension is spread on a relatively infertile area to improve its fertility.

4,279,636

DICHLOROACETYLIMINO HERBICIDE ANTAGONISTS AS PLANT PROTECTION AGENTS

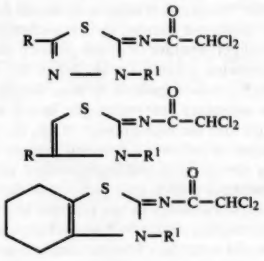
Otto L. Hoffmann, Shawnee, and Joel L. Kirkpatrick, Overland Park, both of Kans., assignors to Gulf Oil Corporation, Pittsburgh, Pa.

Division of Ser. No. 946,975, Sep. 29, 1978, Pat. No. 4,237,302. This application Apr. 4, 1980, Ser. No. 137,670

Int. Cl.³ A01N *43/82*

U.S. Cl. 71—90 **5 Claims**

1. The method of protecting crop plants from herbicides which comprises applying to the crop seeds or to the soil in which the seeds are planted an effective amount, sufficient to improve the resistance of the crop plants to a pre-emergent herbicide of a compound having a structural formula selected from the following formulas,



in which R is hydrogen or C_1 to C_4 alkyl, alkenyl or alkynyl, branched or straight chain and R^1 is C_1 to C_3 alkyl, alkenyl or alkynyl, branched or straight chain, with the total number of carbon atoms in R and R^1 being less than six when both R and R^1 substituents are present.

4,279,637

HERBICIDAL N-SUBSTITUTED 4-IMIDAZOLIN-2-ONES

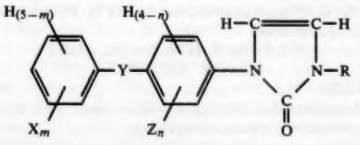
Frank Wu, Libertyville, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 52,525, Jun. 2, 1979, abandoned. This application May 29, 1980, Ser. No. 154,185

Int. Cl.³ A01N *43/50*; C07D *233/70*

U.S. Cl. 71—92 **10 Claims**

1. A compound of the formula



wherein X and Z are each independently selected from the group consisting of halogen, trihalo loweralkyl, nitro, cyano, loweralkyl, loweralkoxy and loweralkylthio; m and n are each independently integers of from 0 to 4; Y is selected from the group consisting of oxygen, sulfur, methylene, sulfonyl and sulfinyl; and R is selected from the group consisting of hydrogen and alkyl.

9. A herbicidal composition comprising an inert carrier and as an essential active ingredient, in a quantity toxic to weeds, a compound of claim **1**.

10. A method of controlling weeds which comprises contacting said weeds with a herbicidally effective quantity of the composition of claim **9**.

4,279,638

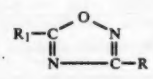
3,5-DISUBSTITUTED 1,2,4-OXADIAZOLE HERBICIDAL ANTIDOTES

Arnold D. Gutman, Berkeley, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Aug. 13, 1979, Ser. No. 66,134
Int. Cl.³ A01N *43/82, 37/16*
U.S. Cl. 71—92 **23 Claims**

1. A composition consisting essentially of

(a) an antidotally effective amount of a compound of the formula

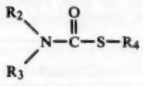


in which

R is selected from the group consisting of 1–4 carbon alkyl and 1–4 carbon haloalkyl;

R_1 is selected from the group consisting of 1–4 carbon haloalkyl and halo-substituted phenyl; and

(b) an herbicidally effective amount of a thiocarbamate of the formula



in which

R_2 is selected from the group consisting of 1–6 carbon alkyl;

R_3 is selected from the group consisting of 1–6 carbon alkyl, and cyclohexyl and

R_4 is selected from the group consisting of 1–6 carbon alkyl.

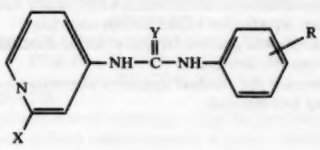
4,279,639

N-(2-SUBSTITUTED-4-PYRIDYL)UREAS AND THIOUREAS AS WELL AS PLANT GROWTH REGULATORS CONTAINING SAME, AND METHOD FOR USING COMPOUNDS AS PLANT GROWTH REGULATORS

Toshihiko Okamoto, 1-7-19, Shinoharakita, Kohokuku, Yokohamashi, Kanagawa; Yo Isogai, 1-1-2-609, Kamiyoga, Setagayaku, Tokyo; Koichi Shudo, 2000-10-2-116 Kosugayacho, Totsukaku, Yokohamashi, Kanagawa, all of Japan, and Soshiro Takahashi, Urawashi, Japan, assignors to Toshihiko Okamoto, Yokohama; Yo Isogai, Tokyo; Koichi Shudo, Yokohama and Susumu Sato, Tokyo, all of, Japan

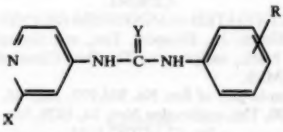
Filed Aug. 1, 1979, Ser. No. 62,850
Claims priority, application Japan, Nov. 2, 1978, 53-135236
The portion of the term of this patent subsequent to Mar. 18, 1997, has been disclaimed.
Int. Cl.³ A01N *43/40*; C07D *213/75*
U.S. Cl. 71—94 **9 Claims**

1. A compound of the formula;



wherein X represents a member selected from the group consisting of fluorine, bromine, hydroxy, lower alkoxy, lower alkylthio, lower alkoxycarbonyl, amino, lower alkylcarbonylamino, benzoylamino, lower alkoxycarbonylamino, cyano and trifluoromethyl; Y represents a member selected from the group consisting of oxygen and sulfur; and R represents a member selected from the group consisting of hydrogen, lower alkyl, lower alkoxy, hydroxy, halogen and trifluoromethyl.

9. A method of controlling plant growth which comprises contacting a plant or a part thereof with a compound of the formula:



wherein X represents a member selected from the group consisting of fluorine, bromine, hydroxy, lower alkoxy, lower alkylthio, lower alkoxycarbonyl, amino, lower alkylcarbonylamino, benzoylamino, lower alkoxycarbonylamino, cyano and trifluoromethyl; Y represents a member selected from the group consisting of oxygen and sulfur; and R represents a member selected from the group consisting of hydrogen, lower alkyl, lower alkoxy, hydroxy, halogen and trifluoromethyl, in an amount effective for regulation of the growth of said plant.

4,279,640

PROCESS FOR UPGRADING IRON-CONTAINING MATERIALS

Michael Robinson, Wooton, England, assignor to Laporte Industries Limited, London, England

Filed Jan. 31, 1980, Ser. No. 117,068
Claims priority, application United Kingdom, Feb. 21, 1979, 6157/79; Oct. 23, 1979, 36646/79
Int. Cl.³ C22B *1/10*
U.S. Cl. 75—1 R **25 Claims**

1. A process for upgrading a material containing oxide of iron in combination with oxide of chromium by reacting at least a portion of the iron content thereof with chlorine and removing the resulting iron chloride as vapour leaving a higher proportion of chromium oxide, which comprises:

(a) forming a fluidised bed having an expanded bed depth of at least 1 meter said bed comprising the said material in finely divided form and finely divided carbon, the carbon being present in the bed in at least sufficient quantity to react with any oxygen added to or evolved in the bed and in at least 15% of the total weight of the carbon and of the said material;

(b) maintaining a reaction temperature of from 900° C. to 1,100° C. in the bed;

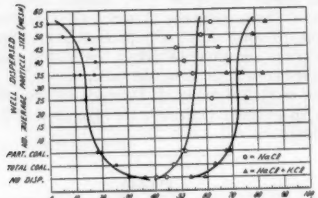
(c) admitting to the bed a chlorine-containing gas giving a concentration of chlorine of from 20% to 60% by volume of the gases added to the bed whereby the chlorine reacts with iron present in the said material to produce ferrous chloride and less than 1 mole of ferric chloride for each 3 moles of the ferrous chloride;

(d) maintaining the partial pressure of ferrous chloride in the gaseous effluent from the bed at a sufficiently low level to prevent liquefaction of the ferrous chloride;
(e) removing the gaseous ferrous chloride-containing effluent from the bed; and
(f) recovering the residual upgraded chromium oxide containing bed material.

4,279,641
SALT-COATED MAGNESIUM GRANULES

Edward J. Skach, Jr., Freeport, Tex., and George B. Cobel, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 936,977, Aug. 25, 1978, Pat. No. 4,186,000. This application Nov. 14, 1979, Ser. No. 94,131
Int. Cl.³ C22C *1/04*
U.S. Cl. 75—0.5 B **24 Claims**



1. A process for producing rotund Mg or Mg alloy granules substantially of about 8 mesh to about 100 mesh particle size in a friable salt matrix, said process comprising

a. providing a salt matrix comprising a mixture of salts selected from the group consisting of salts of alkali metals and alkaline earth metals, wherein the salt mixture is adjusting to have, by weight

at least about 46% alkali metal chloride, from 0 to about 25% $CaCl_2$, from 0 to about 25% $BaCl_2$, less than about 2% metal fluorides, less than about 22% $MgCl_2$, up to about 25% of other salts, additives, or impurities which are substantially inert with respect to Mg or Mg alloy and to the dispersion of Mg or Mg alloy in said salt mixture,

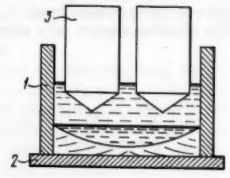
b. melting said salt mixture, along with sufficient Mg or Mg alloy to provide up to about 42% by weight of molten metal in the total melt, stirring the melt at a temperature in the range of about 670° C. to about 820° C. to achieve dispersion of the molten metal in the molten salt mixture, said stirring being performed for a period of time in the range of about 0.5 minutes to about 30 minutes using a stirrer having a tip speed in the range of about 450 to about 1220 meters/minute, and

c. cooling to obtain rotund Mg or Mg alloy granules of about 8 mesh to about 100 mesh size dispersed in the friable salt matrix.

4,279,642
METHOD FOR ELECTROSLAG REMELTING OF METALS

Boris I. Medovar, ulitsa Anri Barbjusa, 22-26, kv. 109; Vitaly M. Baglai, bulvar Lesi Ukrainki, 2, kv. 51; Vasily I. Us, ulitsa Saxaganskogo, 58, kv. 12; Alexei G. Bogachenko, ulitsa Sapernoe pole, 26a, kv. 30; Grigory A. Timashov, bulvar Davydova, 7, kv. 143; Boris B. Fedorovsky, ulitsa Mechnikova, 7a, kv. 26; Oleg P. Bondarenko, ulitsa Kreschatik, 15, kv. 34; Jury P. Shtanko, ulitsa Dobrokhotova, 26, kv. 53; Viktor L. Artamonov, ulitsa Shumskogo, 8a, kv. 90; Leonid V. Pavlov, prospekt Komarova, 28, kv. 6, all of Kiev; Konstantin S. Eltsov, ulitsa Tbilisskaya, 17, kv. 7, Zaporozhie; Nikolai V. Stetsenko, ulitsa Patrioticheskaya, 34, kv. 32, Zaporozhie; Gary P. Kaganovsky, ulitsa Bocharova, 8, kv. 48, Zaporozhie; Albert N. Korotkov, prospekt Lenina, 228, kv. 2, Zaporozhie, and Sergei S. Popov, bulvar Komsomolsky, 66, kv. 63, Zhdanov, Donetskoi oblasti, all of U.S.S.R.

Filed Apr. 1, 1980, Ser. No. 136,249
Int. Cl.³ C22B *4/00*
U.S. Cl. 75—10 C **8 Claims**



1. A method for electroslag remelting of metals, which comprises melting down at least one consumable electrode in a liquid electrically conductive slag and blowing a gas into said slag in at least one jet directed toward the consumable electrode portion immersed in the slag with sufficient force to penetrate the slag and to create a flow of said slag around the slag-immersed portion of said consumable electrode and thereby accelerate the melting-down thereof.

4,279,643
MAGNESIUM BEARING COMPOSITIONS FOR AND METHOD OF STEEL DESULFURIZATION

Joseph R. Jackman, New Castle, Pa., assignor to Reactive Metals & Alloys Corporation, West Pittsburgh, Pa.

Filed Apr. 8, 1980, Ser. No. 138,861
Int. Cl.² C21C *7/02*
U.S. Cl. 75—58 **14 Claims**

1. An injectable pre-blended desulfurization composition for desulfurizing molten steel which excludes sodium carbonate as an added ingredient and provides a marked reduction in fuming with improved sulfur removal, particularly in low-carbon steels consisting essentially of a mixture of particulate lime, particulate fluorspar and at least one member from the group consisting of particulate metallic magnesium and magnesium alloys proportioned to provide effective desulfurization.

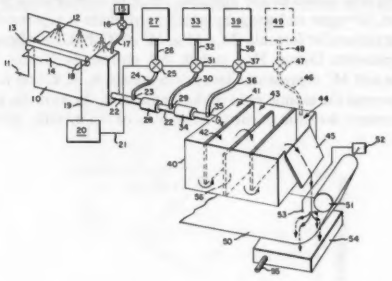
4,279,644
RECOVERY OF SILVER FROM PHOTOGRAPHIC PROCESSOR EFFLUENTS

Lawrence B. Friar, Yorklyn, and Kenneth M. Smith, Newark, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 6, 1980, Ser. No. 157,456
Int. Cl.³ C22B *11/04*
U.S. Cl. 75—118 P **6 Claims**

1. In a process wherein silver is recovered from photographic wash-off film processor effluent containing silver halide and gelatin by chemically reducing ionic silver to metallic silver by reaction with an alkaline solution of sodium boro-

hydride and subsequent filtration, the improvement comprising continuously adding an antifoaming agent to the wash-off effluent, acidifying the effluent to a pH of about 3 by addition of a prediluted aqueous acid solution, followed by mixing the acid with the effluent in a first static mixer, adding a prediluted alkaline solution of sodium borohydride in an amount sufficient



to precipitate silver from the effluent, followed by mixing in a second static mixer, adding a flocculant to the effluent stream, passing the resulting stream to a holding/reaction vessel in order to complete flocculation, and continuously discharging the contents of said vessel to a filter, whereby the silver and gelatin are retained on the filter.

4,279,645

HEAT RESISTANT ALLOY AND METHOD OF MANUFACTURE

Roger K. Brown, 16300 N. Park Dr., Apt. 1011, Southfield, Mich. 48075

Continuation-in-part of Ser. No. 897,629, Apr. 19, 1978, abandoned. This application Feb. 14, 1979, Ser. No. 12,082

Int. Cl.³ C22C *19/05*

U.S. Cl. 75—122 **2 Claims**

1. An alloy consisting essentially of from about 35% to 65% nickel, 15% to 25% chromium, 5% to 20% cobalt, 2% to 5% molybdenum, 1.5% to 4% titanium, 1% to 12% iron, 0.5% to 2% aluminum, 0.3% to 2% silicon, 0.7% to 2% carbon, and 1% to 4% boron.

4,279,646

FREE CUTTING STEEL CONTAINING SULFIDE INCLUSION PARTICLES WITH CONTROLLED ASPECT, SIZE AND DISTRIBUTION

Tetsuo Kato; Shozo Abeyama, both of Aichi; Atsuyoshi Kimura, Handa, and Sadayuki Nakamura, Chita, all of Japan, assignors to Daido Tokushuko Kabushiki Kaisha, Nagoya, Japan

Filed Dec. 19, 1979, Ser. No. 105,222

Claims priority, application Japan, Dec. 25, 1978, 53-158714

Int. Cl.³ C22C *39/14, 39/26*

U.S. Cl. 75—123 AA **9 Claims**

1. A free cutting steel for machine structural use having excellent machinability comprising:

C up to 0.6%,

Si up to 2.0%,

Mn up to 2.0%,

S 0.04 to 0.4%,

Te 0.002 to 0.50%, and

O 0.0010 to 0.0300%,

the balance being substantially Fe;

and containing MnS-based inclusion in the form of particles of 5 to 100μ long, 1 to 10μ wide, wherein the aspect ratio defined by length/width is not larger than 10, and at a density of 20 to 200 particles per 1 mm^2 of matrix cross section.

4,279,647

CONSTRUCTION STEEL EXHIBITING HIGH FATIGUE STRENGTH

Henrik Giflo, III Ujitok u., 3532 Miskolc, Hungary

Filed Jun. 18, 1979, Ser. No. 49,867

Int. Cl.³ C22C *38/06*

U.S. Cl. 75—124 **3 Claims**

1. Construction steel exhibiting a high fatigue strength and, up to a well defined carbon content, a good weldability, and which is resistant to corrosion by air, consisting essentially of, besides iron, 0.04 to 1.6% (by weight) of C, 0.3 to 3% (by weight) of Mn or Ni or their mixture, at a maximum 1.8% (by weight) of Si, 0.6 to 4% (by weight) of Cu, at a maximum 3% (by weight) of Mo or Co or their mixture, 0.02 to 0.4% (by weight) of Nb or V or their mixture, 0.001 to 0.006% (by weight) of B, 0.01 to 0.4% (by weight) of Zr or Be or their mixture, 0.01 to 0.2% (by weight) of Al, 0.005 to 0.2% (by weight) of N, 0.0001 to 0.005% (by weight) of Ca, and at a maximum 0.25% (by weight) of Ce or Pb or their mixture, and up to 0.1% of sulfur.

4,279,648

HIGH SILICON CHROMIUM NICKEL STEEL FOR STRONG NITRIC ACID

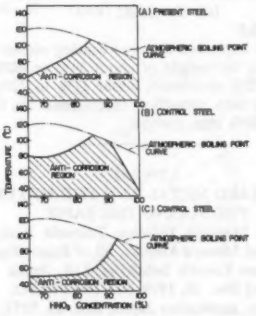
Naoya Ito; Kiichi Saito; Takeshi Yoshida; Masahiro Aoki, all of Joetsu; Masao Okubo, and Masayoshi Miki, both of Niihama, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka and Nippon Stainless Steel Co., Ltd., Tokyo, both of, Japan

Filed Dec. 17, 1979, Ser. No. 103,922

Claims priority, application Japan, Dec. 28, 1978, 53-163014

Int. Cl.³ F16J *3/04;* **C22C** *38/02, 38/48, 38/50*

U.S. Cl. 75—128 C **5 Claims**



1. A high-silicon-nickel-chromium steel resistant to concentrated nitric acid with a good workability and a good weldability, consisting essentially of

carbon in an amount of not more than 0.02% ($C \leqq 0.02\%$),

silicon in an amount of from more than 5% to not more than 7% ($5\% < Si \leqq 7\%$),

manganese in an amount of not more than 10% ($Mn \leqq 10\%$),

chromium in an amount of from not less than 8% to not more than 14.5% ($8\% \leqq Cr \leqq 14.5\%$),

nickel in an amount of from not less than 16% to not higher than 18% ($16\% \leqq Ni \leqq 18\%$),

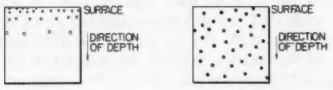
and the balance being iron and inevitable impurities,

percentages being by weight.

4,279,649
ELECTRICAL CONTACT MATERIAL

Koichi Fujiwara; Coro Yamauchi; Kishio Arita, and Shigeyuki Tsurumi, all of Mito, Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan

Filed Jun. 11, 1979, Ser. No. 47,104
Claims priority, application Japan, Jun. 16, 1978, 53/72171; Mar. 28, 1979, 54/35526; Mar. 28, 1979, 54/35527; Apr. 10, 1979, 54/42444; Apr. 10, 1979, 54/42445
Int. Cl.³ C22C 5/00
U.S. Cl. 75—173 A 5 Claims



1. An electrical contact material comprising a silver eutectic alloy comprising Ag as the main component and an additive comprising:

(a) at least one element selected from the group consisting of Si and Ge in an amount of 1 to 17 at.%; and

(b) at least one element selected from the group consisting of Au, Pt, Pd, Rh, Ru, Os and Ir in an amount of 1 to 10 at.%.

said elements being in the form of fine crystals uniformly dispersed in said Ag and internally oxidized and said at.% based on the weight of the material.

4,279,650
TITANIUM BEARING ADDITION ALLOYS

Joseph R. Jackman, New Castle, and Wayne E. Hanna, Ellwood City, both of Pa., assignors to Reactive Metals & Alloys Corporation, West Pittsburg, Pa.

Filed Mar. 17, 1980, Ser. No. 130,605
Int. Cl.³ C22C 14/00
U.S. Cl. 75—175.5 2 Claims

1. A new and improved titanium bearing master alloy consisting essentially by weight of about 54% to 60% titanium, about 15% to 22% aluminum, about 17% to 22% iron, 5% max. silicon, 1% max. vanadium, 0.25% max. tin, 0.75% max. nitrogen and 0.50% max. carbon.

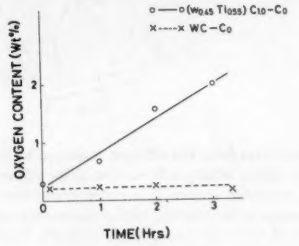
4,279,651
SINTERED HARD METAL AND THE METHOD FOR PRODUCING THE SAME

Naoji Fujimori; Masaaki Tobioka; Tsuyoshi Asai; Takaharu Yamamoto, and Masaya Miyake, all of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Japan

Filed Dec. 28, 1978, Ser. No. 974,512
Claims priority, application Japan, Dec. 29, 1977, 52-159299
Int. Cl.³ C22C 29/00
U.S. Cl. 75—233 9 Claims

1. A sintered hard metal having a B-1 type crystal structure composed of a hard phase and a WC phase as well as a bonding phase chiefly composed of ferrous metals, characterized in that said hard phase consists essentially of at least two different kinds of metals selected from Group IVb, Vb and VIb metals of the Periodic Table in combination with carbon, nitrogen and oxygen which hard phase is represented by the molecular formula $(M_A, M'_B M''_C)(C_uN_vO_w)_z$ wherein M represents Group IVa metals, M' represents Group Va metals and M'' represents Group VIa metals, A, B, C and u, v, w represent the atomic ratio of the elements in the formula, and z represents the ratio of the total number of the metallic atoms to that of C,N,O atoms, with the relationship such that $A+B+C=1$, $u+v+w=1$, $A \geqq 0$, $B \geqq 0$, $A+B>0$, $C>0$, $u>0$, $z \geqq 0.6$, and $0.005<v+w \leqq 0.5$ and $0.005<W<0.5$.

5. A method for producing a sintered hard metal having a B-1 type crystal structure composed of a hard phase and a WC phase as well as a bonding phase chiefly composed of ferrous metals, and wherein said hard phase consists essentially of at least two different kinds of metals selected from Group IVa, Va and VIa metals of the Periodic Table in combination with carbon, nitrogen and oxygen, which hard phase is represented by the molecular formula $(M_A, M'_B, M''_C)(C_uN_vO_w)_z$ wherein M represents Group IVa metals, M' represents Group Va metals and M'' represents Group VIa metals A, B, C and u, v, w represent the atomic ratio of the elements in the formula, and z represents the ratio of the total number of the metallic atoms



to that of C,N,O atoms, with the relationship such that $A+B+C=1$, $u+v+w=1$, $A \geqq 0$, $B \geqq 0$, $A+B>0$, $C>0$, $u>0$, $z \geqq 0.6$, and $0.005<v+w \leqq 0.5$ and $0.005\ W<0.5$, which sintered hard metal of the above formula is produced by mixing two or more different kinds of Group IVa, Va, or VIa metal compounds selected from oxides, carbides and nitrogen containing compounds of said metals with WC and iron Group metals which make up a bonding phase, the whole of said mixture being pressed into a predetermined shape and sintered, said sintering being performed in a CO partial pressure atmosphere above 5 Torr during all or part of the time during which the sintering temperature is in excess of 600° C. and in a vacuum atmosphere below 10^{-1} Torr during all or part of the time at which a liquid phase appears.

4,279,652
SELF-EXTINGUISHING POLYMERS

Aldemaro Ciaperoni, Bollate-Milan, and Antonino Cucinella, Como, both of Italy, assignors to Snia viscosa Societa Nazionale Industria Applicazioni Viscosa, S.p.A., Milan, Italy

Filed Sep. 15, 1977, Ser. No. 833,554
Claims priority, application Italy, Sep. 15, 1976, 27198 A/76; Jul. 20, 1977, 25902 A/77
Int. Cl.³ C08K 5/16, 5/34
U.S. Cl. 106—18.21 6 Claims

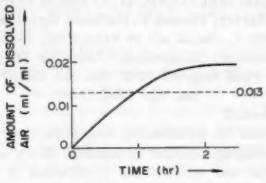
1. A self-extinguishing polymeric composition which comprises a polymer selected from the group consisting of polyamides, copolyamides, polyesters, copolyesters, regenerated cellulose, cotton and mixtures thereof and a self-extinguishing additive product (A) prepared by reacting, in the presence of water, and at a temperature from 100° to 300° C., melamine and at lease one acidic compound, said acidic compound being an anhydride selected from the group consisting of acetic, propionic, butyric, phthalic anhydrides, and mixtures thereof; an acid selected from the group consisting of formic, acetic, propionic, butyric acids, and mixtures thereof; or mixtures thereof, said additive product (A) having a nitrogen content of 3 to 60% by weight and a melting point of at least 300° C.

4,279,653

INK COMPOSITION FOR INK JET RECORDING

Hiroshi Makishima; Tsunehiko Toyoda; Noriaki Okamura, all of Yokohama; Hirofumi Yano, Kamakura; Akira Mizoguchi, Yamato, and Yasutaka Hiromori, Kawasaki, all of Japan, assignors to Dai Nippon Toryo Co., Ltd. and Matsushita Electric Industrial Co., Ltd., both of, Japan

Continuation-in-part of Ser. No. 747,792, Dec. 6, 1976, abandoned. This application Apr. 7, 1980, Ser. No. 139,166
Claims priority, application Japan, Dec. 5, 1975, 50-145583
Int. Cl.³ C09D *11/00*
U.S. Cl. 106—22 2 Claims



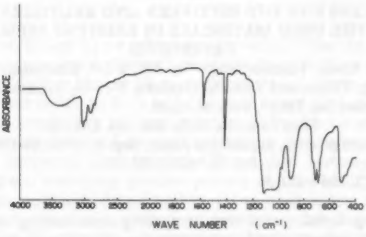
1. An ink composition for ink jet recording which consists of 5 to 40% by weight of a water-soluble wetting agent, 0.1 to 10% by weight of a water-soluble dye, 0.5 to 10% by weight of at least one oxygen absorber selected from the group consisting of sodium sulfite, potassium sulfite, ammonium sulfite, sodium hydrogensulfite, potassium hydrogensulfite, and ammonium hydrogensulfite, and at least one member selected from the group consisting of antiseptics and fungicides with the balance being water, said at least one antiseptic or fungicide being water soluble and not causing the formation of a precipitate being included in an amount ranging from 300 to 5000 ppm in the total ink composition and the ink composition having a viscosity lower than 5 cps, a surface tension of 40 to 50 dyne/cm and an amount of dissolved air lower than 0.013 ml/ml at a temperature approximating room temperature.

4,279,654

PROCESS FOR PRODUCTION OF CRYSTALLIZED GLASS AND PROCESS FOR PRODUCING COMPOSITE ARTICLE USING SAID CRYSTALLIZED GLASS

Seishi Yajima; Kiyohito Okamura; Toetsu Shishido, and Yoshio Hasegawa, all of Oharai, Japan, assignors to The Foundation: The Research Institute for Special Inorganic Materials, Ibaraki, Japan

Filed May 5, 1980, Ser. No. 146,724
Claims priority, application Japan, May 14, 1979, 54-58004; May 21, 1979, 54-61515
Int. Cl.³ C03C *3/22*
U.S. Cl. 106—39.6 9 Claims



1. A process for producing crystallized glass having superior mechanical properties and thermal properties, which comprises

(1) coating glass in the form of a powder or molded article with an organometallic polymer, said polymer being soluble in an organic solvent and having a skeleton comprising (a) titanoxane linkages -(Ti—O)- or zirconoxane linkages -(Zr—O)- or both and (b) siloxane linkages -(Si—O)- in which most of the silicon atoms have as a side chain at least one organic group selected from alkyl and phenyl groups, and optionally (c) boroxane linkages -(B—O)- or aluminoxane linkages -(Al—O)- or both; and

(2) firing the resulting polymer-coated glass in an oxidizing atmosphere to crystallize at least a part of the glass.

8. A process for producing a ceramics-crystallized glass composite article having superior mechanical properties, thermal properties and mechanical workability, which comprises

(1) mixing at least one ceramic material selected from powders, flakes and fibers of ceramics, a glass powder and an organometallic polymer in the optional presence of an organic solvent, said polymer being soluble in an organic solvent and having a skeleton comprising (a) titanoxane linkages -(Ti—O)- or zirconoxane linkage -(Zr—O)- or both and (b) siloxane linkages -(Si—O)- in which most of the silicon atoms have as a side chain at least one organic group selected from alkyl and phenyl groups, and optionally (c) boroxane linkages -(B—O)- or aluminoxane linkage -(Al—O)- or both; and

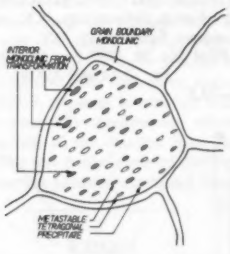
(2) either (i) molding the resulting mixture and then firing the molded article in an oxidizing atmosphere or (ii) molding and firing the resulting mixture simultaneously in an oxidizing atmosphere, thereby to bond said ceramic material by the glass at least partly crystallized.

4,279,655

PARTIALLY STABILIZED ZIRCONIA CERAMICS

Ronald C. Garvie, 63 Morey Rd., Beaumaris, Victoria; Richard H. J. Hannink, 143 Huntingdale Rd., Oakleigh, Victoria, and Neil A. McKinnon, 22 Stephens St., North Balwyn, Victoria, all of Australia

Filed Jan. 4, 1980, Ser. No. 109,711
Claims priority, application Australia, Jan. 4, 1979, PD7274; Apr. 12, 1979, PD8379
Int. Cl.³ C04B *35/48;* C01G *25/02, 27/02*
U.S. Cl. 106—57 14 Claims



1. A ceramic material consisting essentially of magnesia partially stabilised zirconia having a magnesia content in the range from about 2.8 to about 4.0 wt percent, characterised in that zirconia powder from which the material has been made contains no more than about 0.03 wt percent silica and the material has a micro-structure comprising grains of cubic stabilised zirconia, each grain containing (a) discrete precipitates of tetragonal zirconia, each precipitate having an elliptical shape with the mean length in the long dimension being about 1500 Angstrom units, and (b) discrete precipitates of microcrystalline monoclinic zirconia, produced by controlled thermal transformation of a proportion of the precipitates of tetragonal zirconia.

4,279,656

LIGHT-TRANSMITTING SILICON NITRIDE

Charles D. Greskovich, Schenectady; Svante Prochazka, Ballston Lake, and John A. Palm, Clifton Park, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 23, 1980, Ser. No. 114,632
Int. Cl.[3] C04B *35/58*
U.S. Cl. 106—73.5 3 Claims

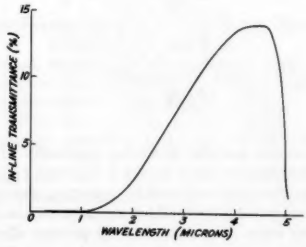
1. A light transmitting polycrystalline silicon nitride body having a density of at least 99.5% of the theoretical density of silicon nitride and consisting essentially of silicon nitride, beryllium and oxygen, said silicon nitride ranging from the β-form to a mixture of the α- and β-forms wherein the β-form is present in excess of 50% by weight of the total amount of said silicon nitride, said beryllium being present in an amount ranging from about 0.3% by weight to about 2.0% by weight of said body, said oxygen being present in an amount ranging from about 2.5% up to about 5% by weight of said body, said polycrystalline body ranging from a single phase body to one consisting of a primary phase and up to about 3% by volume of said body of secondary phase, said body having a thickness ranging from about 0.15 millimeter up to but less than about 0.4 millimeter, a minimum in-line transmission of about 5% of radiant energy at wavelengths ranging from about 0.9 micron to about 2.5 microns, and a minimum in-line transmission of about 10% at wavelengths ranging from about 2.5 microns to about 4.5 microns.

4,279,657

LIGHT-TRANSMITTING SILICON NITRIDE

Charles D. Greskovich, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jan. 30, 1980, Ser. No. 116,834
Int. Cl.[3] C04B *35/58*
U.S. Cl. 106—73.5 4 Claims



1. A light-transmitting polycrystalline silicon nitride body having a density of at least 99.5% of the theoretical density of silicon nitride and consisting essentially of silicon nitride, magnesium and oxygen, said silicon nitride ranging from the β-form to a mixture of the α- and β-forms wherein the β-form is present in excess of 50% by weight of the total amount of said silicon nitride, said magnesium being present in an amount ranging from about 0.4% by weight to less than about 2.0% by weight of said body, said oxygen being present in an amount ranging from about 2.5% up to about 5% by weight of said body, said polycrystalline body consisting of a primary phase and up to about 5% by volume of said body of a secondary phase, said body having a thickness ranging from about 0.15 millimeter up to but less than about 0.4 millimeter, and a minimum in-line transmission of about 1% of radiant energy at wavelengths ranging from about 1.6 microns to about 5.0 microns.

4,279,658

CHEMICAL-MECHANICAL STARCH CONVERSION

Richard D. Harvey; Thomas L. Gallaher; Raymond L. Mullikin, and Thomas L. Small, all of Muscatine, Iowa, assignors to Grain Processing Corporation, Muscatine, Iowa

Filed Aug. 16, 1978, Ser. No. 934,077
Int. Cl.[3] C08L *3/00*
U.S. Cl. 106—213 4 Claims

1. A process for gelatinizing and dispersing starch which comprises bringing together an aqueous slurry of starch and a starch solvent and without the application of external heat imparting thereto a shearing force at a temperature below 100° C., the shearing force being sufficient to provide in less than 5 minutes a gelatinized, dispersed, essentially homogeneous starch paste having a viscosity ranging from about 1.0 to about 2.0 times the shear stable viscosity of the paste, and then removing from the action of the shearing force said starch paste.

4,279,659

LAMINATING COMPOSITION AND USES

George E. Unmuth, Tulsa, Okla., assignor to Petrolite Corporation, St. Louis, Mo.

Continuation of Ser. No. 516,100, Oct. 18, 1976, abandoned, which is a continuation of Ser. No. 195,849, Nov. 4, 1971, abandoned. This application Jul. 11, 1979, Ser. No. 56,676
Int. Cl.[3] C08L *23/12, 71/08, 93/04*
U.S. Cl. 106—230 13 Claims

1. A composition consisting essentially of
(1) about 30–40% by weight of atactic polypropylene having a solid density of 20° C. from 0.75 to 0.89,
(2) about 10–25% by weight of a resin selected from the group consisting of petroleum polymer resins produced by treating hydrocarbon mixtures containing diolefins, olefins, aromatics, paraffins and naphthenes with an aluminum halide catalyst at temperatures from −30° to +75° C., terpene polymer resins, rosin resins, rosin ester resins, coumarone-indene, alpha methyl styrene/vinyl toluene, styrene-indene-isoprene terpolymers, terpene phenolics, hydroabietyl alcohol and esters of hydroabietyl alcohol, and
(3) microcrystalline wax as the balance by weight.

4,279,660

PROCESS FOR THE RECOVERY AND REUTILIZATION OF THE USED MATERIALS IN EXISTING ASPHALT PAVEMENTS

Izumi Kamo, Tamaresidence No. 305, 1-2-7, Kitadenen, Fussa City, Tokyo, and Tetsushi Okahara, 4-26-14, Minamitanaka, Nerima-ku, Tokyo, both of Japan

Filed Mar. 26, 1980, Ser. No. 134,256
Claims priority, application Japan, Sep. 6, 1979, 54-114427
Int. Cl.[3] C08L *95/00*
U.S. Cl. 106—281 R 9 Claims

1. A process for the recovery and reutilization of materials in existing asphalt pavements, comprising comminuting existing asphalt pavement, subjecting the comminuted pieces to the action of a solvent in a dissolving zone to separate asphalt from other component materials, recovering solvent and asphalt dissolved therein from said zone separately from said other materials, drying and classifying said other material according

to size, separating asphalt from the solvent, and transferring separated asphalt and the size-classified other materials to storage zones for subsequent reuse in the preparation of asphalt pavement.

4,279,661

MINERAL FILLER, METHOD OF PREPARATION AND USE THEREOF

Dieter Strauch, Kanalweg 24, CH-4800 Zofingen, and Peter Belger, Juraweg 4, CH-4812 Mühlethal, Switzerland

Filed Feb. 5, 1979, Ser. No. 9,570

Claims priority, application Fed. Rep. of Germany, Feb. 27, 1978, 2808425

Int. Cl.³ C09C *1/02*; C01F *5/140, 11/18*

U.S. Cl. 106—288 B **10 Claims**

1. Mineral filler selected from the group consisting of natural calcium carbonate, precipitated calcium carbonate, dolomite, kaolin, talcum, barium sulfate, quartz, and mixtures thereof, characterized by being prepared by grinding or by classification or by both according to particle size, having a maximum cross-section of 2–3μ with a corresponding spherical diameter, containing at most 15 percent by weight of particles which are smaller than 0.2μ with a corresponding spherical diameter, and having 80–95 percent by weight of particles which are smaller than 1μ with a corresponding spherical diameter.

4,279,662

POLYMERIC RED COLORS

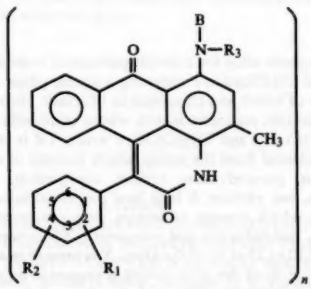
Leonard A. Bunes, San Carlos, Calif., assignor to Dynapol, Palo Alto, Calif.

Continuation-in-part of Ser. No. 35,163, May 2, 1979, which is a division of Ser. No. 751,857, Dec. 17, 1976, Pat. No. 4,182,885. This application May 17, 1979, Ser. No. 39,977

Int. Cl.³ C04B *31/38*; C07D *221/18*

U.S. Cl. 106—289 **5 Claims**

1. An acid-insoluble pigment comprising a particulate inorganic oxidic substrate having deposited on the surface thereof a polymeric colorant in an amount of from 1 to 75%, basis weight of total pigment, said colorant having the formula



wherein R_1 and R_2 are independently selected from the group of hydrogen, halos of atomic number 9 through 53 inclusive, lower alkyls and lower alkoxies of from 1 to 3 carbon atoms, nitro, and sulfonate; R_3 is hydrogen or a lower alkyl of 1 to 3 carbon atoms, B is an organic polymeric backbone selected from the members of the group consisting of carbon-oxygen ether backbones and essentially linear alkyl carbon-carbon backbones containing pendant primary and lower alkyl secondary amines of 1 to 3 carbon atoms, said carbon-carbon backbones in acetylated form, said carbon-carbon backbones additionally containing additional covalently attached pendant groups selected from the group consisting of a sulfonate, a phosphonate and a carboxyl, and said carbon-carbon backbones additionally containing additional covalently attached groups in acetylated form; said backbone attached to N by a covalent bond and characterized as having essentially no cross-links; and n is a number from 10 to 4000.

4,279,663

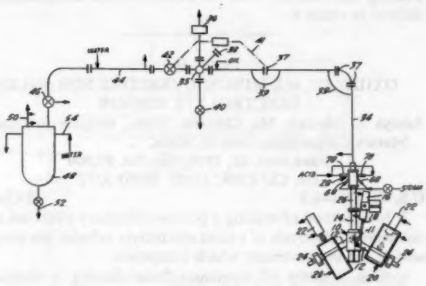
REACTOR SYSTEM AND PUMP APPARATUS THEREIN

Reginald L. Burroughs, Trenton; William J. Thompson, Lambertville, and Derek Wooldridge, Princeton, all of N.J., assignors to American Can Company, Greenwich, Conn.

Division of Ser. No. 2,886, Jan. 12, 1979, abandoned. This application Apr. 2, 1980, Ser. No. 136,470

Int. Cl.³ C13K *1/02*

U.S. Cl. 127—1 **3 Claims**



1. A reactor system for continuously effecting the hydrolysis of cellulosic materials as relatively concentrated aqueous mixtures, comprising: a tubular reactor having an infeed end and a product discharge end with a reaction zone therebetween; high solids pump means for substantially continuously feeding a relatively concentrated aqueous mixture of a cellulosic material into said reactor connected to said infeed end thereof; said high solids pump means including a pair of hoppers each having a feed ram individual thereto, a charging barrel surrounding each feed ram and communicating with said reactor, each feed hopper including a moveable wall terminating in a curved element defining a cut-out in said charging barrel thereby creating a window in the barrel, said curved element being movable from a first position in which said window is open to a second position in which said window is closed; means for continuously injecting steam into said reactor at a location between said infeed end and said reaction zone; a valve in said reactor adjacent said discharge end adapted to alternatingly close and open said reactor, so as to prevent and to permit discharge of the reaction mass therefrom; control means for operating said valve in response to pressure within said reaction zone, for substantially continuously effecting the discharge of the portion of the reaction mass therefrom; and means for collecting the hydrolyzate so discharged, and for recovering the reaction products contained therein.

4,279,664

AZEOTROPE-LIKE COMPOSITIONS OF TRICHLOROTRIFLUOROETHANE, ACETONE AND N-HEXANE

Francis J. Figiel, Boonton, and Aaron Colbert, Livingston, both of N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Apr. 9, 1980, Ser. No. 138,486

Int. Cl.³ B08B *7/00*

U.S. Cl. 134—38 **6 Claims**

1. Azeotrope-like compositions comprising 1,1,2-trichloro-1,2,2-trifluoroethane, acetone and n-hexane.

3. The method of cleaning a solid surface which comprises treating said surface with an azeotrope-like composition as defined in claim 1.

4,279,665
AZEOTROPE-LIKE COMPOSITIONS OF TRICHLOROTRIFLUOROETHANE, ACETONE AND CYCLOPENTANE

Aaron Colbert, Livingston, and Francis J. Figiel, Boonton, both of N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Apr. 9, 1980, Ser. No. 138,487
Int. Cl.³ B08B 7/00
U.S. Cl. 134—38 **6 Claims**

1. Azeotrope-like compositions comprising 1,1,2-trichloro-1,2,2,-trifluoroethane, acetone and cyclopentane.

3. The method of cleaning a solid surface which comprises treating said surface with an azeotrope-like composition as defined in claim 1.

4,279,666
OXIDIZED ALUMINUM OVERCOAT FOR SOLID ELECTROLYTE SENSOR

Adolph L. Micheli, Mt. Clemens, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 28, 1979, Ser. No. 97,906
Int. Cl.³ C23C 11/00; B05D 5/12
U.S. Cl. 148—6.3 **3 Claims**

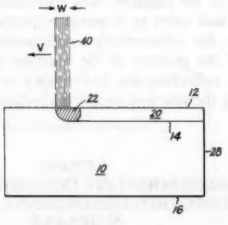
2. In a method of making a porous refractory overcoat on a noble metal electrode of a solid electrolyte exhaust gas oxygen sensor, the improvement which comprises:

coating a slurry of aluminum flakes having a maximum dimension of about 10 micrometers, an organic binder and a vehicle onto the noble metal electrode, drying the coating and then heating the coating in an oxidizing atmosphere to at least form a rigid exoskeleton of aluminum oxide on each flake, that is interlocked with aluminum oxide exoskeletons on adjacent flakes wherein a strongly bonded and durable porous refractory overcoat about 0.1–0.3 millimeter thick is inexpensively formed on the noble metal electrode.

4,279,667
ZIRCONIUM ALLOYS HAVING AN INTEGRAL β-QUENCHED CORROSION-RESISTANT SURFACE REGION

Thomas R. Anthony, Schenectady, N.Y., and Harvey E. Cline, Stanford, Calif., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 22, 1978, Ser. No. 972,388
Int. Cl.³ C22C 16/00; C22F 1/18
U.S. Cl. 148—32 **8 Claims**



1. An article of manufacutre comprising

a body of zirconium alloy having a composite microstructure including:

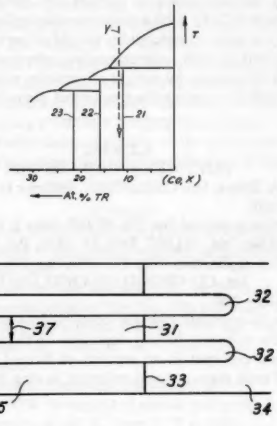
a core having a first microstructure selected to maximize the physical structure and mechanical properties of said article, and

an integral outer surface region encompassing said core to a depth in the range of from about 1.25×10^{-2} cm to 1 cm having a second microstructure of β-quenched zirconium alloy to impart enhanced corrosion resistance to said article in a high temperature and high pressure steam environment.

4,279,668
DIRECTIONALLY SOLIDIFIED DUCTILE MAGNETIC ALLOY

Wilfried Kurz, Lausanne, Switzerland, and Remi Glardon, Berkeley, Calif., assignors to Les Fabriques d'Assortiments Reunies-Div. R, LeLocle, Switzerland

Continuation-in-part of Ser. No. 849,956, Nov. 9, 1977, Pat. No. 4,208,225, which is a continuation-in-part of Ser. No. 683,617, May 5, 1976, abandoned. This application Apr. 12, 1979, Ser. No. 29,477
Claims priority, application Switzerland, May 5, 1975, 005725/75
The portion of the term of this patent subsequent to Jun. 17, 1997, has been disclaimed.
Int. Cl.³ C04B 35/00; H01F 1/04
U.S. Cl. 148—101 **1 Claim**



1. A magnetic alloy for a ductile permanent magnet made by directional solidification comprising a ductile phase consisting essentially of cobalt and chromium or of cobalt, chromium and iron in a brittle, magnetic matrix whose composition lies between $TR(Co,X)_5$ and $TR_2(Co,X)_{17}$, where TR is at least one element selected from the group which consists of samarium, gadolinium, praseodynium, cerium, neodymium, holmium, lanthanum, and yttrium; X is at least one metal selected from the group which consists of copper, iron, chromium, nickel, aluminum, molybdenum, and manganese; TR is present in an amount of 10 to 15 at % of the alloy, X is present in an amount of 10 to 40 at % of the alloy, cobalt is present in an amount of 50 to 80 at % of the alloy; and chromium is present in an amount of 0.5 to 5 at % of the alloy.

4,279,669
METHOD FOR EPITAXIAL DEPOSITION

Peter D. Braun, Obersulm-Eschenau, and Wolodymyr Kosak, Biberach, both of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

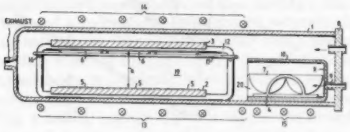
Filed Jun. 27, 1979, Ser. No. 52,394
Claims priority, application Fed. Rep. of Germany, Jul. 7, 1978, 2829830
Int. Cl.³ H01L 21/20
U.S. Cl. 148—175 **5 Claims**

1. A method of epitaxial deposition on semiconductor substrate discs by conversion of gaseous semiconductor com-

pounds, said conversion taking place in a transfer space between a material source region and the semiconductor substrate discs, comprising in combination:

arranging a plurality of coplanar semiconductor substrate discs in a common open region of reaction tube having a gas inlet and a gas outlet at its respective ends with said substrate discs being arranged adjacent one another in a plane extending substantially parallel to the longitudinal axis of the reaction tube;

providing a source of semiconductor material opposite each of said substrate discs in said common open region of the reaction tube with said source material being disposed in a plane which is parallel to and vertically displaced from said plane of said semiconductor substrate discs and with the spacing between said planes being small as compared to the length of the reaction tube;



separately controlling and maintaining the temperature in said planes at different desired temperatures;

providing an additional source of semiconductor material in an initial chamber disposed in said reaction tube adjacent its gas inlet;

maintaining said additional source of semiconductor material at a desired temperature; and

flowing a reaction gas through said initial chamber and then through said common portion of the reaction tube to provide a respective partial pressure equilibrium system of the gaseous medium produced around said substrate discs and said source material, whereby said two equilibrium systems come into interaction across said transfer space between said planes while eroding semiconductor material from the source and depositing semiconductor material on the substrate discs.

4,279,670

SEMICONDUCTOR DEVICE MANUFACTURING METHODS UTILIZING A PREDETERMINED FLOW OF REACTIVE SUBSTANCE OVER A DOPANT MATERIAL

S. Robert Steele, Sudbury, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Aug. 6, 1979, Ser. No. 64,339

Int. Cl.[3] H01L *21/205, 29/207*

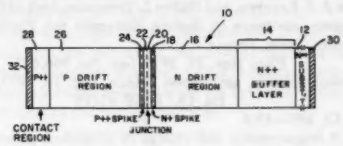
U.S. Cl. 148—175 **13 Claims**

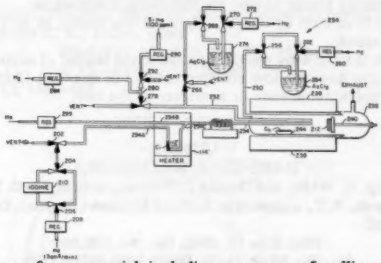
1. A method for producing a doped gallium arsenide semiconductor layer comprising the steps of:

(a) directing a predetermined flow of a reactive substance selected from a group consisting of: iodine, a compound of iodine, bromine, or a component of bromine, over a material having a dopant;

(b) chemically reacting the reactive substance with such material producing a corresponding flow of a doping vapor having the dopant, such doping vapor having a vapor pressure at a predetermined temperature at least an order of magnitude greater than the vapor pressure of the material at said predetermined temperature; and

(c) depositing the doped gallium arsenide semiconductor layer on a gallium arsenide substrate by vapor phase epi-





taxy from material including a source of gallium and arsenic and the doping vapor.

4,279,671

METHOD FOR MANUFACTURING A SEMICONDUCTOR DEVICE UTILIZING DOPANT PREDEPOSITION AND POLYCRYSTALLINE DEPOSITION

Shigeru Komatsu, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

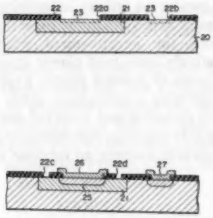
Filed Oct. 24, 1978, Ser. No. 954,326

Claims priority, application Japan, Nov. 10, 1977, 52/134096

The portion of the term of this patent subsequent to Sep. 23, 1997, has been disclaimed.

Int. Cl.[3] H01L *21/225, 21/20*

U.S. Cl. 148—188 **18 Claims**



1. A method for manufacturing a semiconductor device comprising the steps of preparing a silicon substrate having a p-type region with an exposed surface on one side thereof, forming an n-type region by depositing phosphorus on said exposed surface of the p-type region, forming a polycrystalline silicon layer on said n-type region, and heating said n-type region to diffuse phosphorus within said n-type region into said p-type region and into said polycrystalline silicon layer to form a diffused region in said p-type region.

4,279,672
FRAGMENTABLE PROPELLANT CONTAINING POLYVINYL NITRATE BINDER

Louis J. J. Leneveu, and Didier J. Treneules, both of Chateaulin, France, assignors to Societe Nationale des Poudres et Explosifs, Paris, France

Filed Nov. 29, 1978, Ser. No. 964,482
Claims priority, application France, Dec. 15, 1977, 77 37901
Int. Cl.³ C06B *45/10*
U.S. Cl. 149—19.8 **7 Claims**

1. A fragmentable unit charge of propellant powder, which consists of 85 to 97% by weight of grains of propellant powder containing nitrocellulose, which are agglomerated together by means of 15 to 3%, by weight of a thermoplastic, solid energy-producing binder having the following composition:

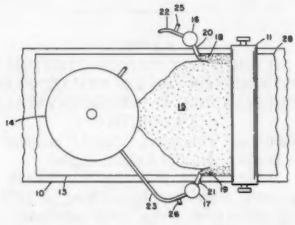
(a) 30 to 60% by weight, relative to the binder, of polyvinyl nitrate,

(b) 70 to 40% by weight, relative to the binder, of nitrocellulose having a low nitrogen content of less than 12.8%, or polyvinyl acetate or a mixture of the two.

4,279,673
HARD-EDGE WALLBOARD

George H. White, and Donald J. Petersen, both of North Tonawanda, N.Y., assignors to National Gypsum Company, Dallas, Tex.

Filed Feb. 11, 1980, Ser. No. 120,566
Int. Cl.³ B32B *13/00*; B05D *5/00*; B32B *3/26*
U.S. Cl. 156—39 **5 Claims**



1. In a method of manufacturing gypsum wallboard which comprises depositing a central stream of foamed plastic gypsum on a table and depositing separate streams of relatively unfoamed plastic gypsum along opposite sides of the central stream, leveling the combined streams to form a single flat slab, and drying to produce a unitary monolithic core having edge portions of greater density than the main central portion of the monolithic core, the improvement wherein said separate streams of relatively unfoamed plastic gypsum are formed by diverting a portion of foamed plastic gypsum to at least one agitator and admixing a defoaming agent with said diverted portion prior to agitating said diverted portion, whereby said agitator thoroughly disposes said defoaming agent throughout said diverted portion, causing an increase in density thereof.

4,279,674
PROCESS FOR PREPARING WORKS OF ART

Marie-Claire Wadden, 10505 Weymouth Ave., Beltsville, Md. 20705

Filed Dec. 27, 1979, Ser. No. 107,565
Int. Cl.³ B05D *5/06, 1/38*
U.S. Cl. 156—62 **12 Claims**

1. A method of preparing a work of art comprising steps of:

providing a plurality of colored wax markers;

warming a planar element to a temperature at which said colored wax markers melt into a fluent mass upon contact with said planar surface, said predetermined temperature being below a temperature at which melted wax from such wax markers will break up;

contacting said warmed planar element with one of said colored wax markers and forming a first viscous mass of colored wax on said heated planar element;

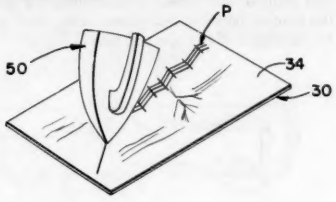
holding a planar flexible backing member by an edge of such backing member;

drawing one surface of such backing member through said first mass of colored wax in one sweeping motion to form a smooth, even background coating of colored wax on said one surface;

allowing the colored wax to dry on the backing member;

providing a hand held tool which has a tip, at least one edge and a planar surface;

heating the tip, edge and planar surface of said hand held tool to said predetermined temperature;



drawing the heated tip through the dried colored wax on the backing member to melt portions of said dried wax and define a design in said background;

forming additional viscous masses of colored wax on said edge and on said planar surface of said heated hand held tool, said additional masses having colors different from said first mass and from each other;

touching the dried colored wax on the background with the additional masses on the heated tool edge and planar surface and transferring the additional masses of colored wax to that dried colored wax on the backing member;

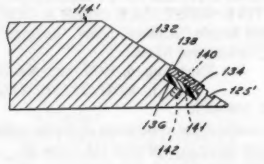
allowing the additional colored wax to dry; and

buffing the dried colored waxes by gently rubbing a polishing cloth over the dried colored waxes.

4,279,675
METHOD AND APPARATUS FOR PACKAGING

Eric A. Braun, Northville, Mich., assignor to Ex-Cell-O Corporation, Troy, Mich.

Continuation of Ser. No. 780,137, Mar. 22, 1977, abandoned, which is a continuation of Ser. No. 559,869, Mar. 19, 1975, abandoned, which is a division of Ser. No. 443,594, Feb. 19, 1974, Pat. No. 3,910,014. This application Jan. 10, 1980, Ser. No. 110,870
Int. Cl.³ B29C *27/08*; B31B *1/28*
U.S. Cl. 156—73.1 **10 Claims**



3. Apparatus for welding together layers of an end closure of a container comprising: an anvil having a support surface for engaging one outer surface of the layers; and vibrating means engageable with the opposite outer surface of the layers when said one outer surface is engaged with said support surface, said vibrating means being operable to vibrate at a frequency sufficient to generate heat for welding the layers together; a portion of said support surface including means for accommo-

dating variations in the thickness of the layers to minimize variations in pressure applied to the layers over the areas of the surface engaged by the support means and vibrating means; said last named means comprising: an elongated groove formed in said support surface; a strip of elastomeric material received in said groove having a thickness less than the depth of said groove; and a plate member received in said groove and resiliently supported on said strip of elastomeric material, the outer surface of said plate member projecting above the support surface in the unstressed condition of said strip of elastomeric material; and further including at least one screw securing said plate member to said anvil, said screw having a head and a shank, said shank having a nonthreaded portion extending from the head and a threaded portion extending from the nonthreaded portion, said shank extending through said plate member and the strip of elastomeric material with the threaded portion threadedly engaged with the base of said groove.

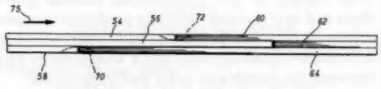
10. A method of closing and sealing an end closure of a thermoplastic coated paperboard container having a four-sided tubular body of a rectangular cross-section wherein the end closure includes front, rear and side panels and a sealing flap each extending from the edge of a respective one of the sides of the container body in co-planar relationship therewith in the open position of the end closure, each of said panels and sealing flap having a sealing portion that overlaps in the closed position of the end closure; said method comprising the steps of: folding the end closure to its closed position with the sealing portions of the panels and sealing flap overlapping, positioning the sealing portions of said panels and sealing flap between the surface of an anvil having grooves and recesses thereon for accommodating variations in the thickness of the sealing portions including the sealing portion of the sealing flap and the surface of a vibration welding horn; pressing the sealing portions against the anvil surface to force the sealing portions of the end closure into the grooves and recesses and energizing the horn with the sealing portions clamped between the surface of the horn and anvil at a substantially uniform pressure over substantially the entire length of the sealing portions including the sealing portion of the sealing flap for a predetermined period of time to activate the thermoplastic coating of the sealing surface to flow; deenergizing the horn; holding the sealing portions of the closed end closure in compression with the sealing portions against the surface of the anvil until the activated thermoplastic cools and sets to weld the sealing portions together; and removing the sealed end closure from said anvil surface.

4,279,676

PROCESS OF MAKING A BELTING JOINT

Donald Morrison, Harper, and William T. Muma, Jr., Anthony, both of Kans., assignors to Morrison Company, Inc., Anthony, Kans.

Filed Sep. 6, 1979, Ser. No. 72,840
Int. Cl.³ B65H *69/06*
U.S. Cl. 156—159 **1 Claim**



1. A method of splicing the ends of three-ply belting material to form an endless belt, comprising the steps of:

(a) forming a tongue at the upstream end of the belting material by removing a first predetermined length of the outer ply on the first side of the material and a second predetermined length of the outer ply on the second side of the belting material, the second predetermined length being greater than the first predetermined length;

(b) forming a groove in the downstream end of the belting material by removing a portion of the center ply of the downstream end which is equal in length to the second predetermined length and by removing a portion of material, which is equal in length to the first predetermined length, from the outer ply of the downstream end which is to mate with the first side of the upstream end;

(c) inserting the tongue at the upstream end of the belting material into the groove in the downstream end of the material to mate said upstream and downstream ends; and

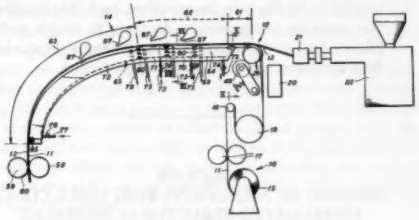
(d) forming a secured joint between the upstream and downstream ends of the belting material.

4,279,677

METHOD OF MEANS FOR JOINING PLASTIC FASTENER STRIP TO FILM

Katsuhito Takahashi, Shizuoka, Japan, assignor to Seissan Nippon-Sha K. K., Tokyo, Japan

Filed Nov. 16, 1979, Ser. No. 94,763
Int. Cl.³ B29D *7/08*; B32B *7/04, 31/16*
U.S. Cl. 156—160 **25 Claims**



1. A method of joining a plastic fastener strip continuously to a film, comprising:

running a film of substantial width continuously longitudinally through a joining station;

offsetting a selected longitudinal joining area of the film relative to and from the plane of the remainder of the film as the film runs through said joining station, and thereby maintaining said selected longitudinal joining area of the film in a stable tensioned condition;

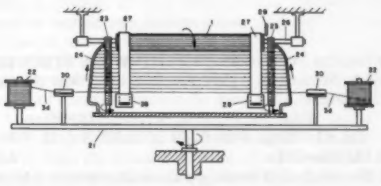
and joining and securing to said tensioned joining area in said joining station, a fastener strip running in the same direction and at the same speed as said film.

4,279,678

HOLLOW FIBER APPARATUS FOR THE FRACTIONATION OF FLUID ESPECIALLY USEFUL AS AN ARTIFICIAL KIDNEY

Charles Amicel, Carrieres Sur Seine; Bernard Biot, Craponne; Yves Butruille, Ferrolles-Attilly, and Christian Ollivier, Vienne, all of France, assignors to Sodip SA, Meyzieu, France

Division of Ser. No. 834,997, Sep. 20, 1977, Pat. No. 4,203,844.
This application Jun. 4, 1979, Ser. No. 44,915
Claims priority, application France, Oct. 5, 1976, 76 30673
Int. Cl.³ B65H *81/00*
U.S. Cl. 156—169 **8 Claims**



1. A process for the production of hollow fiber apparatuses for the factionation of fluid, the apparatuses each comprising a

mandrel in the form of a truncated cone having cylindrical ends, in which,

an envelope of hollow fibers is produced by the winding of at least one hollow fiber around at least one displaceable extension ramp and at least two supports which are in motion, the supports in motion sliding the envelope on the ramp and moving the envelope forward in relation to the supports,

the envelope of hollow fibers, while being moved forward by the supports in motion, is wound at least partially around at least one truncated cone with cylindrical ends mandrel which is rotating around its longitudinal axis, the envelope slackening from its winding tension and taking up the profile of the mandrel during its sliding on the ramp,

the envelope is then sectioned towards at least one end of the mandrel, while holding the envelope by means which are being wound around the mandrel towards its ends,

moving said displaceable extension ramp to reduce the extension of the fibers in the envelope, such that the fibers of the envelope progressively decrease in length with the fibers adjacent the truncated cone having a greater length than those furthest from the truncated cone.

4,279,679

METHOD OF MANUFACTURING INSULATING CORRUGATED STRUCTURAL MEMBERS

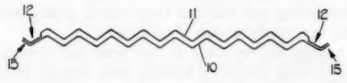
Elvin N. Sheppard, Barton-under-Needwood, England, assignor to Pierdeed Limited, Staffordshire, England

Filed Jun. 11, 1979, Ser. No. 47,316

Claims priority, application United Kingdom, Jun. 21, 1978, 27505/78

Int. Cl.³ B32B *3/02, 3/28*

U.S. Cl. 156—196 **10 Claims**



1. A method of manufacturing an insulating structural member from two sheets which have previously been provided with substantially identical longitudinally extending corrugations from one lateral edge to the other lateral edge over their full width, at least one of said sheets being of a thermoplastic material, said method comprising deforming said one sheet only, so that the lateral outer edge portions thereof are displaced from the plane of the remainder of said one sheet, and securing said lateral outer edge portions to the other sheet so that the corrugations on said sheets are maintained in substantially parallel spaced relationship from edge to edge.

4,279,680

METHODS FOR FORMING THINWALL STRUCTURES

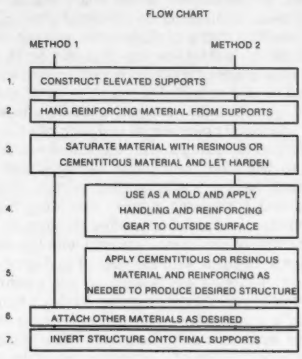
Louis L. Watson, Jr., 1708 Ferndale Cir., West Sacramento, Calif. 95691

Filed Jul. 28, 1978, Ser. No. 928,998

Int. Cl.³ B29D *9/00;* **B28B** *1/16;* **E04B** *1/32, 7/10*

U.S. Cl. 156—212 **2 Claims**

1. The method of forming a thinwall structure which comprises constructing elevated supports, hanging closely spaced reinforcing means between said supports in essentially a catenary surface, stabilizing the reinforcing means by saturating and enveloping them with resinous or cementitious material which is allowed to harden and finally inverting the structure onto mirror image supports causing its elements to be in compression with negligible bending or tensile stresses.


FLOW CHART
METHOD 1
METHOD 2
1. CONSTRUCT ELEVATED SUPPORTS
2. HANG REINFORCING MATERIAL FROM SUPPORTS
3. SATURATE MATERIAL WITH RESINOUS OR CEMENTITIOUS MATERIAL AND LET HARDEN
4. USE AS A MOLD AND APPLY HANDLING AND REINFORCING GEAR TO OUTSIDE SURFACE
5. APPLY CEMENTITIOUS OR RESINOUS MATERIAL AND REINFORCING AS NEEDED TO PRODUCE DESIRED STRUCTURE
6. ATTACH OTHER MATERIALS AS DESIRED
7. INVERT STRUCTURE ONTO FINAL SUPPORTS

4,279,681

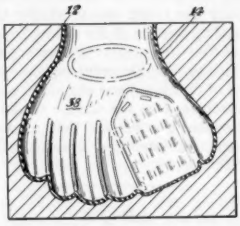
MOLDED BASEBALL GLOVE AND THE METHOD OF MAKING

Frank Klimezky, 3581 S. Ocean Blvd., South Palm Beach, Fla. 33460

Continuation-in-part of Ser. No. 879,124, Feb. 21, 1978, abandoned. This application Dec. 19, 1979, Ser. No. 105,139

Int. Cl.³ B29C *19/00;* **B32B** *7/14;* **B29C** *13/00;* **A41D** *13/08*

U.S. Cl. 156—245 **4 Claims**



1. The method of making a unitary plastic baseball glove having the appearance of a conventional leather baseball glove comprising:

(a) forming in a cavity mold a plastic unitary hollow shell, said molded shell having a outer convex front surface being distorted in shape when molded compared to said front surface of said conventional baseball glove, said front and rear surfaces including predetermined protuberances and indentations forming half-finger receiving areas, half-thumb receiving areas and a web surfaces extending between the thumb and index half-finger areas;

(b) removing the shell from the mold cavity;

(c) forcing the distorted convex front surface of the shell inwardly concavely for contiguous positioning of the half-finger delineations the half-thumb delineations, and the web areas between the front and rear surfaces, said front surface having the appearance of the front surface of a conventional baseball glove in the collapsed, concave position when contiguous with the rear surface of said shell; and

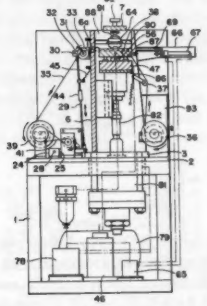
(d) connecting the half-finger delineating areas, half-thumb delineating areas, and the webs together to form a final molded conventionally appearing baseball glove.

4,279,682

APPARATUS FOR SECURING TAPE TO LEADS OF SEMICONDUCTOR LEAD FRAME

Teruaki Hamagami, Koganei; Kazuo Maetani, Higashiyamato, and Fumio Sato, Hamuramachi, all of Japan, assignors to Sumitomo Metal Mining Company Limited, Tokyo, Japan

Filed Nov. 2, 1979, Ser. No. 90,697
Claims priority, application Japan, Nov. 2, 1978, 53/135555
Int. Cl.³ B32B *31/00*
U.S. Cl. 156—367 **22 Claims**



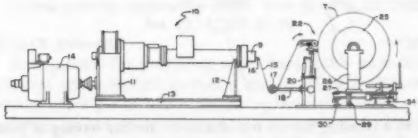
1. An apparatus for the pasting of at least one tape portion from at least one elongated tape onto at least one lead frame unit, comprising, a machine frame, means on said frame for intermittently feeding a predetermined length of insulated tape to a punching and pasting station, means for punching said tape at said station to produce said tape portion and for pressing said tape portion against said lead frame unit, meand for horizontally moving said lead frame unit from a feed table to said punching and pressing means at said station, means on said feed table for positioning a plate comprised of a plurality of interconnected lead frame units, said positioning means being defined by an upper surface of said feed table having a depression therein for the reception of the plate, plate access holes extending through said table and overlapping with portions of said depression to thereby provide access for the manual removal of the plate from said table, said moving means including plate engaging means and means for reciprocating said plate engaging means for setting the plate at said station and for returning the plate to said table after being pasted, and means for timing the operation of said feeding means, said punching and pressing means and said moving means, said punching and pressing means including a stationary upper die member having a surface on which said lead frame unit is supported, means in said die member for supporting said tape a spaced distance from said surface, and a punch member movable toward and away from said surface for punching said tape.

4,279,683

TIRE BUILDING MACHINE

Clifford A. Landsness, Akron, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Oct. 25, 1979, Ser. No. 88,314
Int. Cl.³ B29H *17/20*
U.S. Cl. 156—397 **3 Claims**



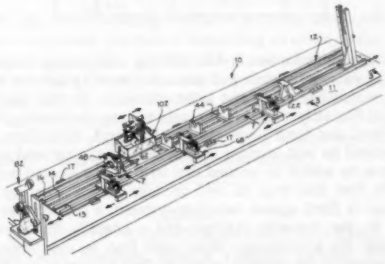
1. A machine for winding a flat ribbon onto a tire carcass comprising a support frame, a tire building drum for supporting a tire carcass pivotally mounted on said support frame, extruder means for supplying said flat ribbon to said tire building drum, a ribbon guide means located between said extruder and said tire building drum for applying said ribbon to said tire carcass on said drum, means for moving said tire building drum through a predetermined angular oscillation path for applying a plurality of windings of said ribbon on a selected area of said tire carcass from side to side and over the crown of said tire carcass as said ribbon guide means feeds said ribbon from said extruder to said drum, said ribbon guide means includes a pair of spaced guide rollers, one of said rollers applying said ribbon to said tire carcass in said drum, said means for moving said tire building drum through said predetermined angular path cooperative with said one roller applying said ribbon to deposit said flat ribbon in overlapping relationship, a stitching roller mounted on a moveable support, power operated means connected to said moveable support for moving said stitching roller into and out of engagement with said ribbon being applied directly to said drum from said one roller wherein said one roller is rotated thereby, belt means interconnecting said pair of spaced guide rollers to rotate said rollers at the same angular velocity, and said one guide roller is smaller in diameter than the other one of said pair of guide rollers whereby said one guide roller has a greater peripheral speed than said other one of said guide rollers to effect frictional contact over the width of said flat ribbon with the ribbon it overlaps and with the adjacent ribbon or tire carcass eliminating air pockets therebetween as the entire overlap of said flat ribbon is wound onto said tire carcass.

4,279,684

SYSTEM FOR APPLYING AND WRAPPING LINE GUIDES TO A FISHING ROD BLANK

Eugene B. Mason, 9675 E. Live Oak Rd., Stockton, Calif. 95215

Filed Oct. 12, 1979, Ser. No. 84,501
Int. Cl.³ B21F *17/00*
U.S. Cl. 156—425 **14 Claims**



11. In a rod wrapping system further including rod supporting means including an elongate bed member, elongate guide means carried by said bed member, assemblies for supporting and holding a rod to be wrapped, said assemblies being movable variously along said guide means, each of said assemblies including a plurality of three independently operable rollers arranged to include two bottom rollers disposed in predetermined spaced relation for receiving a fishing rod blank or the like mutually thereon and a top roller pivotable into and out of engagement with a rod carried by said bottom rollers to define the center of rotation between the three rollers when holding the rod, means supporting the center of rotation of each of said assemblies at progressively different heights from said bed member to align the center of rotation of said assemblies to lie substantially on a common axis, said assemblies being movable along said channel until the center of rotation of each given assembly lies on the axis of said rod when parallel to said bed member, a vertically adjustable rod supporting and holding assembly disposed in alignment with said guide means, the last

named assembly comprising a stationary, upwardly oriented mounting plate, an adjustable carriage, means for readily releasably coupling said carriage to said plate to permit movement of said carriage along said plate between lowered and raised positions upon release of the last named means and to secure said carriage to said plate when not released, said last named assembly including a plurality of three independently operable rollers arranged to include two bottom rollers disposed in spaced relation and a top roller pivotable into and out of engagement with a fishing rod carried between same to define the center of rotation between the three rollers when so holding the rod, said means for readily releasably coupling said carriage to said plate serving to permit the center of rotation of the last named assembly to be moved upwardly or downwardly into alignment with the axis of the center of rotation of the other supporting and holding assemblies.

4,279,685

APPARATUS FOR USE IN FILM SPLICING

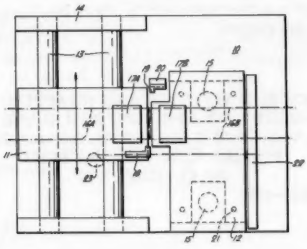
Roger C. Barnett, St. Albans; Robert G. Sharpless, Brentwood, and Colin F. Mossman, Hillingdon, all of England, assignors to The Rank Organisation Limited, London, England

Filed Mar. 7, 1980, Ser. No. 128,257

Claims priority, application United Kingdom, Mar. 7, 1979, 07989/79

Int. Cl.³ G03D *15/04*

U.S. Cl. 156—509 **10 Claims**



1. Apparatus for use in film splicing, comprising a carriage having an upper surface and means for locating thereon a film strip which has a free end to be spliced to the free end of a second film strip, means for linearly moving the carriage laterally back and forth transverse to the length of the film strip supported on said carriage surface, a table support and means thereon by which the second film strip can be located parallel to the first film strip on said carriage, means whereby said support is fixed against lateral movement, a first scraper carried by the movable carriage and a laterally fixed second scraper, the arrangement being such that, in use, transverse movement of the carriage causes the first scraper to scrape the end of the second film strip and the second scraper to scrape the end of the first film strip, while after scraping the carriage can be laterally repositioned within its range of back and forth movement with the scraped film ends in alignment for splicing.

4,279,686

APPARATUS FOR APPLYING WEB SECTIONS TO A FLAT-LYING WORKPIECE

Fritz Achelpohl, Lengerich, and Werner Decker, Ladbergen, both of Fed. Rep. of Germany, assignors to Windmöller & Hölscher, Lengerich, Fed. Rep. of Germany

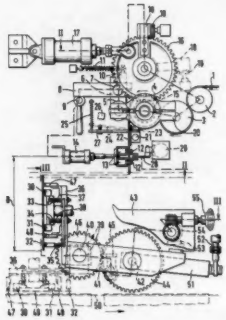
Filed Jun. 1, 1979, Ser. No. 44,757

Claims priority, application Fed. Rep. of Germany, Jun. 5, 1978, 2824596

Int. Cl.³ B35B *35/00*

U.S. Cl. 156—517 **14 Claims**

1. Apparatus for applying a section severed from a web pulled off a supply reel, e.g., of an internal closure or of a base cover-sheet, onto a flat-lying workpiece, such as a pulled-open or already closed base, comprising a pair of intermittently driven rollers for feeding and advancing a web in sections, clamping jaws arranged on both sides of the web, said jaws being movable toward and away from one another for clamping the web fed by the intermittently driven rollers and being divided into two pairs, the pairs being mounted with a space therebetween, a knife guided in the space between the pairs of jaws for severing web sections guided between said clamped by the jaws, and suction means including at least one sucker for



gripping severed web sections, swing lever means for supporting said suction means in such manner that a gripped section is transferred onto the flat-lying workpiece, said at least one sucker being movable by said swing lever means between a first position downstream of the clamping jaws for receiving a part of a web that projects beyond the clamping jaws, and a second position rotated 90° from the first position, said at least one sucker being pressed against a workpiece in said second position.

4,279,687

LABELING STATION WITH GLUEING MEANS FOR BOTTLES OR THE LIKE

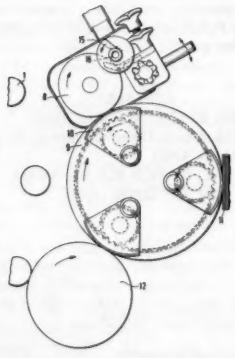
Rainer Buchholz; Rudolf Zodrow, both of Dusseldorf, and Heinz J. Rosenberg, Neuss, all of Fed. Rep. of Germany, assignors to Jagenberg-Werke AG, Dusseldorf, Fed. Rep. of Germany

Filed Sep. 4, 1979, Ser. No. 72,378

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1978, 2838158

Int. Cl.³ B65C *9/10, 9/16*

U.S. Cl. 156—568 **14 Claims**



1. In a labeling station for bottles or the like having at least one glue segment which is rotatably mounted on a revolving carrier and having a pickup surface, a label magazine, a rotat-

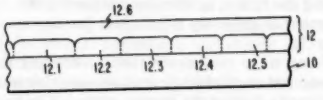
ing glue roll which coats the pickup surface with glue such that labels can be picked up thereby from the label magazine, a rotating gripper cylinder which picks up labels from the segments and then affixes the label by its glue-coated side to a bottle moving past it and applicator means for applying a layer of glue to the surface of the glue roll including a doctor blade for determining the thickness of the layer by its spacing from the glue-roll surface, the improvement wherein the applicator means further comprises means defining a glue nozzle for producing a glue jet, a glue scraper and means mounting the glue nozzle means and the glue scraper for swinging movement about an axis parallel to that of the glue roll from a first position where the glue jet is directed at the surface of the glue roll and the scraper is spaced apart from the glue roll surface to a second position where the glue jet is directed away from the glue roll surface and the scraper is ahead of the doctor blade in the direction of rotation of the glue roll and is closer to the surface of glue roll than the doctor blade to remove any glue thereon.

4,279,688

METHOD OF IMPROVING SILICON CRYSTAL PERFECTION IN SILICON ON SAPPHIRE DEVICES

Marvin S. Abrahams, Cranbury, and Joseph Blanc, Princeton, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Mar. 17, 1980, Ser. No. 131,046
Int. Cl.³ C30B *25/02, 29/06*
U.S. Cl. 156—613 **8 Claims**



1. A method of improving crystalline silicon perfection comprising the steps of:

(a) providing an insulating substrate;

(b) initially depositing a discontinuous layer of crystalline silicon on the substrate at a given growth temperature, the layer characterized by the formation of discrete growth islands of crystalline silicon;

(c) terminating the deposition of the crystalline silicon;

(d) maintaining the substrate and growth islands at the given growth temperature for a given period of time to cure any crystallographic misorientations and defects that may have been formed in the silicon islands; and

(e) depositing silicon on the now cured islands and on the substrate.

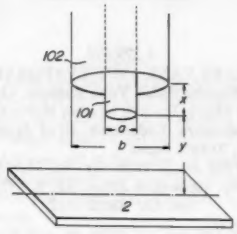
4,279,689

PROCESS FOR PRODUCING SUPER HARD-HIGHLY PURE SILICON NITRIDES

Toshio Hirai, and Koichi Niihara, both of Sendai, Japan, assignors to The Research Institute for Iron, Steel and Other Metals of the Tohoku University, Japan

Division of Ser. No. 756,282, Jan. 3, 1977, Pat. No. 4,118,539. This application Jul. 21, 1978, Ser. No. 926,612
Claims priority, application Japan, Nov. 8, 1977, 52/756282
Int. Cl.³ C30B *25/10*
U.S. Cl. 156—614 **4 Claims**

1. A process for producing super hard-highly pure silicon nitrides, characterized in that a gas of nitrogen depositing source and a gas of silicon depositing source are blown on a substrate heated at a temperature of 500°–1,900° C. by means of a blowpipe composed of a pipe assembly in which the gas stream of the nitrogen depositing source is surrounded with the gas stream of the silicon depositing source, and chemical vapor-deposition reaction of both the gases is caused on or near



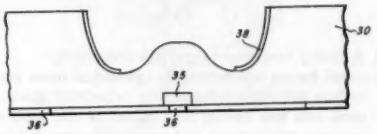
the substrate, whereby silicon nitride is deposited and formed on the substrate.

4,279,690

HIGH-RADIANCE EMITTERS WITH INTEGRAL MICROLENS

Eugene G. Dierschke, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 626,406, Oct. 28, 1975, abandoned. This application Sep. 19, 1977, Ser. No. 834,211
Int. Cl.³ H01L *21/306*
U.S. Cl. 156—649 **4 Claims**



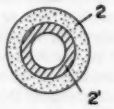
1. A process for making a radiation emitting semiconductor device comprising the steps of depositing an oxide on one side of an emitting device structure having an emitting junction, selectively removing an annular region of the oxide, selectively etching the exposed annular portion of the device structure to form a mesa type structure, selectively removing the oxide over the mesa structure and then selectively etching further to round the top of the mesa structure.

4,279,691

METHOD OF MAKING BORON CANTILEVER

Masaki Aoki, Hirakata; Shigeru Yoshida, Kadoma; Hiroshi Yamazoe, Katano, and Masahiro Nagasawa, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Japan

Filed Dec. 12, 1979, Ser. No. 102,846
Int. Cl.³ C23F *1/00*
U.S. Cl. 156—656 **24 Claims**



1. A method of making a boron cantilever in pipe form, comprising: preparing a metal substrate; depositing a boron layer on said metal substrate by chemical vapor deposition; and immersing the thus boron-coated metal substrate in a selective etchant for etching said metal substrate, thus leaving said boron layer as said pipe, said etchant being a solvent having

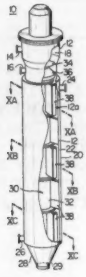
dissolved therein at least one of bromine, iodine, iodine trichloride, iodine monochloride and iodine monobromide.

4,279,692

ROTARY VANE TYPE EVAPORATOR

Koichi Chino, Hitachi; Hideo Yusa, Katsuta; Akira Oda, Hitachi; Hideichi Miura, Ibaraki; Susumu Horiuchi, Hitachi, and Yoshiyuki Takamura, Kudamatsu, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 5, 1979, Ser. No. 54,945
Claims priority, application Japan, Jul. 5, 1978, 53-80997
Int. Cl.[3] B01D *1/22*
U.S. Cl. 159—6 W 2 Claims



1. A rotary vane type evaporator comprising:

a vessel having a substantially cylindrical inner peripheral surface defining a substantially cylindrical space about a main axis and having inlet means at one axial end for passing a solution into said vessel at the one end to form a solution region and move axially therethrough to be treated by evaporation so that its viscosity changes in the axial direction to form a slurry region in the axially intermediate portion of said vessel and a powder region at the other axial end, and further having outlet means for removing the powder at the other end;

means for heating at least a portion of said inner peripheral surface of said vessel;

a rotor including a rotor shaft mounted in said vessel for rotation about said axis and a plurality of radially extending vanes mounted on said rotor shaft for rotation therewith adapted to force and spread said substance over said vessel inner peripheral surface;

said vanes being disposed in a plurality of stages arranged in the axial direction of said vessel, each region including at least one vane, each vane being pivotally mounted on said rotor shaft about a pivot axis parallel to and radially spaced from the axis of said rotor shaft, a shoe connected to the radially outer end of said vanes and each said shoe having a cylindrical surface slidingly engaging said vessel inner peripheral surface over an area extending along an arc in the circumferential direction of said vessel;

the respective shoes in axial direction of the feed decreasing in dimension of the cylindrical surface with the smallest dimension in an intermediate shoe; and

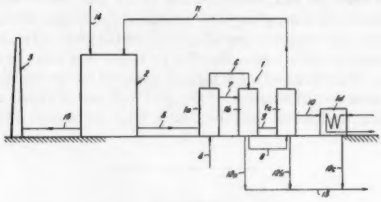
said rotor including means to counteract the effect of axially changing viscosity and to urge said shoes against said vessel inner peripheral surface during rotation of said rotary shaft with radial forces in said solution and powder regions that are substantially smaller than the radial forces within said slurry region so the shoes of the vanes of all the stages are worn at a substantially equal rate with use of an axially varying viscosity fluid.

4,279,693

PROCESS FOR PURIFYING POLLUTED FLUIDS

Hans Kühnlein, Füllinsdorf, and Walter J. Jarosch, Bubendorf, both of Switzerland, assignors to Hch. Bertrams Aktiengesellschaft, Basel, Switzerland

Continuation of Ser. No. 469,640, May 14, 1974, abandoned. This application Sep. 24, 1976, Ser. No. 726,233
Claims priority, application Switzerland, May 14, 1973, 6788/73; Jan. 18, 1974, 685/74
Int. Cl.[3] B01D *1/02*
U.S. Cl. 159—47 WL 4 Claims



1. A continuous process for purifying an impure effluent comprising a volatile component and a non-volatile component, said process including the steps of:

(1) heating the effluent to evaporation to produce an impure vapor containing the volatile component and a residue comprising a concentrate of the non-volatile component;

(2) introducing the residue into a combustion chamber, where it is at least partially burned;

(3) using the heat of combustion obtained in the combustion chamber to indirectly supply heat for use in evaporation step (1);

(4) adding air to the impure vapor containing the volatile component to produce an impure vapor/air mixture;

(5) indirectly heating the impure vapor/air mixture;

(6) introducing the heated impure vapor/air mixture into a reaction chamber where complete oxidation and combustion of the remaining impurities takes place to produce a purified vapor containing non-condensable gases; and

(7) using the purified vapor containing the non-condensable gases to indirectly heat the impure vapor/air mixture in step (5).

4,279,694

METHOD FOR TREATING REFINED MECHANICAL PULP AND THERMO MECHANICAL PULP WITH OZONE

Bjorn H. Fritzvold, Hosle, and Nicolai Soteland, Oslo, both of Norway, assignors to Myrens Verksted A/S, Norway

Continuation of Ser. No. 942,774, Sep. 15, 1978, abandoned. This application Dec. 7, 1979, Ser. No. 101,146
Claims priority, application Norway, Oct. 17, 1977, 773560
Int. Cl.[3] D21B *1/14;* D21C *9/10*
U.S. Cl. 162—28 5 Claims

1. In a method for continuously treating refined mechanical pulp and thermo-mechanical pulp in which the pulp is subjected to a first stage refining process, treated with ozone and subsequently treated in a second stage refining process, wherein the improvement comprises:

(a) refining the pulp in said first stage refining process, by means of a single grinding step to a freeness value of at least 200 csf, and a dry substance consistency of 20–60%,

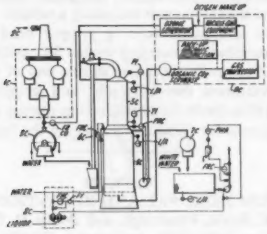
(b) cooling the refined pulp to a temperature below approximately 70° C.,

(c) treating the cooled pulp with ozone,

(d) treating the ozonized pulp in a high-consistency maturation reactor in which a material selected from the group consisting of alkali and bleaching chemicals is added for not more than 30 minutes to produce a high-consistency

pulp having a solids content of between 10–40% and a pH in the range of 7–10,

(e) passing the matured, high consistency pulp directly and continuously to a second stage refiner,



(f) grinding the pulp in said second stage refiner by means of a single grinding step to a desired freeness value.

4,279,695

PROCESS FOR THE MANUFACTURE OF COMPOSITE MATERIALS

Peter H. Winterbottom, Oldham, England, assignor to Turner & Newall Limited, Manchester, England

Filed Nov. 26, 1979, Ser. No. 97,448

Claims priority, application United Kingdom, Dec. 9, 1978, 47848/78; Aug. 13, 1979, 28169/79

Int. Cl.³ D21H *5/12*

U.S. Cl. 162—146 **5 Claims**

1. A process for the manufacture of an asbestos-free composite material comprising a matrix of set inorganic binder and fibrous reinforcement, comprising dewatering an aqueous slurry containing:

(a) water-settable inorganic binder in an amount forming at least half of the solids content of the slurry,

(b) web-forming fibres selected from cellulose fibres, polyethylene fibres and polypropylene fibres,

(c) reinforcing carbon fibres of tensile modulus not greater than 125 GPa, in an amount forming from about 0.1 to about 2.5% by weight of the solids content of the slurry, and

(d) ball clay in an amount which forms from about 5 to 30% by weight of the solids content of the slurry and is such as to reduce shrinkage of the composite material during setting of the inorganic binder.

4,279,696

PROCESS FOR FORMING FRICTION MATERIALS

Jay L. Piersol, Lancaster, Pa., assignor to Armstrong World Industries, Inc., Lancaster, Pa.

Filed Jun. 20, 1980, Ser. No. 161,413

Int. Cl.³ D21H *5/18*

U.S. Cl. 162—146 **9 Claims**

1. A process for forming a friction material, comprising the steps of:

(a) forming an aqueous slurry at 7–15 weight percent solids and a Canadian freeness of about 500 to about 600, said slurry comprising:

(1) about 5 to about 15 weight percent of an aqueous suspension of refined cellulose fibers, said suspension having 1–5 weight percent solids and a Canadian freeness in the range of from about 300 to about 500;

(2) from about 25 to about 70 weight percent fine metal fibers;

(3) from about 12 to about 15 weight percent powdered resin;

(4) from about 5 to about 15 weight percent rubber latex; and

(5) from about 5 to about 25 weight percent inorganic fillers;

(b) forming a thickened sheet from said slurry; and

(c) curing said sheet to thereby form a friction material containing metal fibers substantially evenly dispersed therethrough.

4,279,697

METHOD OF AND APPARATUS FOR SHUTTING DOWN A GAS-COOLED NUCLEAR REACTOR

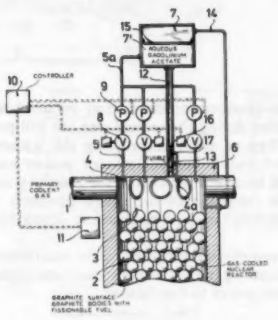
Theodor Overhoff, Niederzier; Rudolf Schulten, Aachen-Richterich; Jasbir Singh, Jülich; Gerd Sylvester, Leverkusen, and Josef Witte, Cologne, all of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich Gesellschaft mit beschrankter Haftung, Jülich and Bayer AG, Leverkusen, both of, Fed. Rep. of Germany

Filed Nov. 30, 1978, Ser. No. 964,937

Claims priority, application Fed. Rep. of Germany, Dec. 3, 1977, 2753928

Int. Cl.³ G21C *7/06*

U.S. Cl. 176—22 **27 Claims**



1. A process for reducing the reactivity of a nuclear reactor of the type in which a primary coolant gas is passed into direct contact in a reactor core with the graphite surfaces of nuclear-fuel elements constituted by graphite bodies containing fissionable fuel, said process comprising introducing from a location outside of said core into the primary coolant gas for entrainment by the primary coolant gas into contact with the surfaces of said fuel elements, a gadolinium^{157}-containing substance which is at least partly deposited on said surface for adsorption of neutron flux whereby the gadolinium^{157} undergoes at least in part a nuclear transmission to gadolinium^{158}.

4,279,698

NUCLEAR REACTOR OPERATION CONTROL PROCESS

Toshiaki Doi, Shimane; Shigeru Suematsu, Hitachi; Chikamasa Nishida, Hitachi, and Hiroshi Hiranuma, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 762,248, Jan. 25, 1977, abandoned. This application Apr. 18, 1979, Ser. No. 31,159

Int. Cl.³ G21C *7/06*

U.S. Cl. 176—22 **34 Claims**

1. A process of controlling operation of a nuclear reactor including a plurality of fuel elements in a reactor core each having a cladding and a plurality of fuel pellets encased in the cladding, control rods for effecting coarse control of reactor power, and means for effecting fine control of reactor power, comprising:

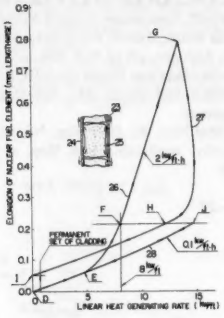
a first step of withdrawing the control rods from said reactor core to cause the reactor power to rise to a first level;

a second step of interrupting the withdrawing of the control rods and operating the fine control means while the withdrawing of the control rods is interrupted to cause the reactor power to rise from the first level to a second level

higher than the first level so as to produce and accumulate neutron absorptive fission products in the fuel elements;

a third step of operating the fine control means to cause the reactor power to fall to a third level lower than said first level by virtue of the presence of said fission products produced and accumulated in the fuel elements during the second step;

a fourth step of restarting the withdrawing of the control rods which was interrupted to cause the reactor power to rise to a fourth level higher than said third level while the



fission products produced and accumulated in the fuel elements during the second step are still present therein;

a fifth step of again interrupting the withdrawing of the control rods when the reactor power has reached the fourth level and permitting the reactor power to rise due to the reduction of the fission products produced and accumulated in the fuel elements during the second step; and

a sixth step of operating the second control means while the withdrawing of the control rods is interrupted to cause the reactor power to rise further.

4,279,699

COMBINED GRIPPER FOR A NUCLEAR REACTOR

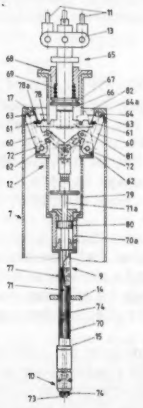
Rolf Kuhn, Würzburg, Fed. Rep. of Germany, assignor to GG. Noell GmbH, Fed. Rep. of Germany

Filed Dec. 18, 1978, Ser. No. 970,208

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1977, 2756370

Int. Cl.³ G21C *19/20*

U.S. Cl. 176—30 **6 Claims**



1. A device for selectively lifting a fuel element and an assembly of operating rods of a nuclear reactor, for example, control rods, which are positioned in such an element, the assembly being of the type having means interconnecting the ends of the rods to form a bundle, comprising a vertically elongated guide tube, a telescoping unit reciprocatably displaceable in said guide tube for telescopic movement relative thereto, said telescopic unit including a tubular casing slidably mounted to said guide tube, a gripper head comprising a mounting member, connecting means for resiliently interconnecting said mounting member to one end of said casing for relative overtravel therebetween, said gripper head being movable within limits in any direction during the overtravel, and pawl means for releasably engaging the fuel element.

4,279,700

TRITIUM REMOVAL AND RETENTION DEVICE

Raymond F. Boyle, Pittsburgh, and Docile D. Durigon, North Huntingdon, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 741,924, Nov. 15, 1976, abandoned, which is a continuation of Ser. No. 621,975, Oct. 14, 1975, abandoned. This application Oct. 11, 1978, Ser. No. 950,359

Int. Cl.³ G21C *3/02*

U.S. Cl. 176—68 **9 Claims**

1. A fuel rod for use in a nuclear reactor comprising a plurality of pellets composed of nuclear material, a tubular cladding enclosing said pellets, means hermetically sealing said rod, said clading having a clearance space with respect to the pellets, a plenum area within said rod, a tritium removal and storage device disposed within said plenum and separate from said cladding, said removal and storage device comprising an inner core of zirconium alloy and an adherent outer layer of a nickel alloy bonded to the exposed surfaces of said core, said outer layer being above five percent by weight of said removal and storage device.

4,279,701

SHIELD WALL FOR SURROUNDING REACTOR CONTAINMENT VESSEL FOR NUCLEAR REACTOR AND METHOD FOR CONSTRUCTING THE SAME

Sakae Ebata; Masahide Watari; Sunao Hayakumo, and Osamu Oyamada, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 31, 1978, Ser. No. 911,076

Claims priority, application Japan, Jun. 1, 1977, 52-64437

Int. Cl.³ G21C *9/00*

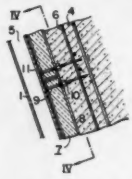
U.S. Cl. 176—87 **9 Claims**

1. In a reinforced concrete shield wall for surrounding a nuclear reactor container enclosing therein a nuclear reactor vessel with a nuclear reactor core, said reinforced concrete shield wall being spaced apart from said reactor container, an improvement comprising:

a supporting structure constructed between said reactor container and the interior surface of said reinforced con-

crete shield wall and spaced apart from said reactor container,

a plurality of heat insulation blocks interposed between said supporting structure and the interior surface of said reinforced concrete wall to form an insulation layer, the plurality of heat insulation blocks being supported by said



supporting structure and an exterior surface of the insulation layer formed by said plurality of heat insulation blocks contacting the interior surface of said reinforced concrete shield wall, and

retaining means for securely retaining said heat insulation blocks between said supporting structure and said reinforced concrete shield wall.

4,279,702

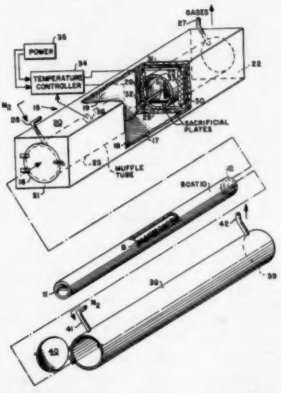
APPARATUS FOR MAKING HOLLOW CARBON MICROSPHERES

Robert G. Shaver, Alexandria, and William R. Leake, Reston, both of Va., assignors to Versar, Inc., Springfield, Va.

Division of Ser. No. 10,867, Feb. 9, 1979, Pat. No. 4,229,425. This application Jan. 10, 1980, Ser. No. 110,874

Int. Cl.³ C10B *1/06*

U.S. Cl. 202—137 **4 Claims**



1. Apparatus for making hollow carbon microspheres from batches of hollow microballoons made of heat carbonizable material, the apparatus comprising:

(a) an oven having a ceramic muffle tube therein, the oven surrounding and enclosing the muffle tube and having heating means between the oven and the tube for maintaining the tube at a temperature above the carbonizing temperature of said material, and the oven having a door providing access to the muffle tube;

(b) means for flushing the muffle tube with an inert gas;

(c) a graphite boat shaped to fit within the muffle tube and confine a batch of microballoons, the graphite boat being shaped to fully enclose said microballoons and thereby to provide a thermal barrier between the microballoons and the heated muffle tube, and the boat having small openings operative to permit flushing thereof with said inert gas and to permit the escape of volatile products of decomposition;

(d) an unheated chamber outside the oven shaped to receive and enclose the boat during cooling; and

(e) means for maintaining an inert gas atmosphere in said second chamber.

4,279,703

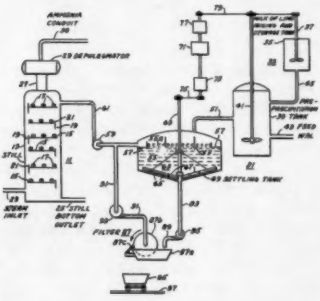
APPARATUS FOR THE DISTILLATION OF WEAK AMMONIA LIQUOR

Daniel Kwasnoski, Hellertown; Charles J. Sterner; Russel J. Horst, both of Bethlehem, and Kenneth R. Burcaw, Easton, all of Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Continuation of Ser. No. 934,148, Aug. 16, 1978, abandoned, which is a division of Ser. No. 695,624, Jun. 14, 1976, Pat. No. 4,108,734. This application Dec. 3, 1979, Ser. No. 99,700

Int. Cl.³ B01D *3/20, 3/22*

U.S. Cl. 202—158 **3 Claims**



1. An improved apparatus arrangement for removing free and fixed ammonia from undistilled weak ammonia liquor derived from a coal coking operation while reducing calcium solids accumulation in still apparatus constituting a portion of the improved apparatus arrangement and wherein the undistilled weak ammonia liquor contains both substantial free ammonia as ammonium carbonate, ammonium sulfide and ammonium cyanide and fixed ammonia as ammonium chloride, ammonium thicyanate and ammonium sulfate, comprising in series:

(a) mixing apparatus for mixing undistilled weak ammonia liquor with lime,

(b) clarification apparatus means arranged to receive mixed lime-liquor slurry from the mixing apparatus means of (a) and adapted to separate solids from the liquor,

(c) a single leg ammonia still apparatus means arranged to receive clarified liquor from the clarification means of (b) and adapted to remove ammonia from said clarified liquor by steam distillation, the still apparatus being comprised of a column shell in which are mounted a plurality of liquid supporting trays with a plurality of spaced gas passage orifice means in said trays, the relative surface area of said individual liquid supporting trays with respect to the total orifice area in said trays providing a molar liquid to gas ratio for said trays and the still apparatus of 5 to 10.

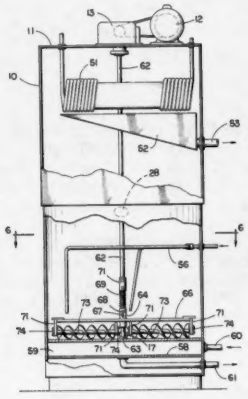
Said apparatus arrangement having all distillation apparatus adapted to treat the weak ammonia liquor derived from the coal coking operation positioned in line subsequent to the mixing and clarification apparatus means.

4,279,704

DRY CLEANING STILL APPARATUS

Kenneth E. Noble, Sr., and Kenneth E. Noble, Jr., both of 390 N., U.S. Hwy. 31 S., Whiteland, Ind. 46184

Filed Aug. 8, 1980, Ser. No. 176,264
Int. Cl.[3] B01D *3/02*
U.S. Cl. 202—175 **3 Claims**



1. A dry cleaning solvent recovery still including an upright cylindrical body having means for introducing liquid solvent containing finely divided solids into the still body to a predetermined depth, means for heating the liquid above its boiling point, a condensing coil disposed adjacent the upper end of the still body for condensing the solvent vapor and draining it to the exterior of the still body, the still being characterized by a drive shaft extending into the interior of the still and supporting for free rotation two coaxial auger members spanning the diameter of said still body adjacent the base thereof, and power means exterior of the still body for rotating said drive shaft to move the auger members over the base of the still body to agitate and divide the solid residue of the liquid distillation said auger members being supported by an arm mounted at its midpoint to said drive shaft and diametrically spanning the base of said still body, spaced depending flanges on said arm supporting an auger shaft for free rotation on each of the two radial portions of the arm, and means for flowing steam and hot water through the still after distillation has halted for flushing the finely divided solids from the still.

4,279,705

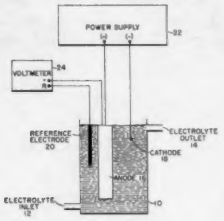
PROCESS FOR OXIDIZING A METAL OF VARIABLE VALENCE BY CONSTANT CURRENT ELECTROLYSIS

Olen L. Riggs, Jr., Bethany, Okla., assignor to Kerr-McGee Corporation, Oklahoma City, Okla.

Filed Feb. 19, 1980, Ser. No. 122,585
Int. Cl.[3] C25C *1/22;* **C25B** *1/00*
U.S. Cl. 204—1.5 **9 Claims**

1. A process for changing the valence of a metal of variable valence state in a solution to a higher valence state which comprises:

providing an electrolytic cell containing an electrolyte comprising the solution containing the metal of variable valence and having an anode and a cathode positioned therein, said anode having a surface coating containing manganese dioxide, said anode and cathode having an anode surface area to cathode surface area ratio of at least about 100:1 exposed to said electrolyte in said cell, said cell having no separate anode and cathode compartments within said cell;



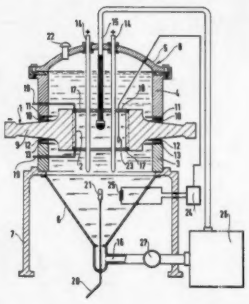
electrolyzing said electrolyte within said electrolytic cell by constant current means to change the valence of the metal of variable valence state to a higher valence state.

4,279,706

METHOD AND ASSEMBLY FOR DEPOSITING A METAL ON A CYLINDRICAL BORE WHICH PASSES THROUGH A CENTRAL PORTION OF A LARGE PART

Jacques Blanc, Lyons; Andre Coulon, Bessoncourt, and Gilbert Pellus, Evecquemont, all of France, assignors to Alsthom-Atlantique, Paris and TSM Traitements de Surface et Mecanique, Vigny, both of, France

Filed May 27, 1980, Ser. No. 153,290
Claims priority, application France, Mar. 27, 1980, 80 06834
Int. Cl.[3] C25D *7/04, 17/02, 21/10*
U.S. Cl. 204—26 **9 Claims**



1. A method of depositing a metal on a cylindrical bore which passes through the central portion of a large part, said method comprising the step of:

placing and centering said large part between an upper tank and a lower tank having a common vertical axis of symmetry so that the axis of symmetry of the bore coincides with the axis of the tanks with the two tanks and the part defining a chamber inside which the large part bore is disposed and outside which the peripheral portion of the part extends,

filling said chamber with electrolyte,

causing the electrolyte to flow rapidly between a supply tube which discharges in said chamber and a removal tube situated at the bottom of the lower tank,

regenerating the electrolyte outside the tank when it has been discharged and before it is injected again through the supply tube,

entraining the electrolyte inside the chamber circularly at the level of the bore of the part, and

shaking it in all directions in the lower tank, and

effecting a simultaneously direct current flow between firstly a ring of anodes which are disposed adjacent the

bore and symmetrically round the axis of the tanks and secondly the large part which serves as a cathode.

4,279,707

ELECTROPLATING OF NICKEL-IRON ALLOYS FOR UNIFORMITY OF NICKEL/IRON RATIO USING A LOW DENSITY PLATING CURRENT

Nathaniel C. Anderson, Pine Island, Minn., and Charles R. Grover, Jr., San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 970,709, Dec. 18, 1978, abandoned. This application Feb. 19, 1980, Ser. No. 122,628

Int. Cl.³ C25D *3/56*

U.S. Cl. 204—43 T **9 Claims**

1. A nickel-iron electroplating method for plating NiFe alloy onto a substrate with a relatively high degree of uniformity of magnetic nickel-iron alloy composition over a range of plating current densities comprising,

an aqueous plating bath solution at a temperature in the range from about 20° C. to about 35° C., placing a substrate with a complex topographical shape in said plating bath solution,

employing a constant current plating density from about 2 milliamperes per centimeter squared to about 12 milliamperes per centimeter squared,

said plating bath solution having ferrous ion concentration in the range from about 0.15 to about 0.3 grams per liter and a nickel ion concentration in the range from about 10 to about 14 grams per liter,

with a pH of the bath of about 3,

maintaining continuous agitation of a paddle moving over the surface of the cathode at a distance of about 2–3 millimeters at a rate of about 1 cycle per second, and

thereby providing differences of less than about 2% by weight in the nickel/iron composition ratio of the NiFe magnetic alloy produced across said complex topographical shape.

4,279,708

COMBINED BRIGHTENER IN SULFAMATE SILVER ELECTROPLATING BATHS

Todor V. Novev; Sava D. Ovcharov; Nikola S. Yordanov; Jivka P. Acheva; Yordan I. Yordanov, and Maria L. Mandova, all of Sofia, Bulgaria, assignors to Institute po Zashtita na Metalite ot Korroziya, Sofia, Bulgaria

Filed Feb. 29, 1980, Ser. No. 125,785

Claims priority, application Bulgaria, Jul. 6, 1979, 44224

Int. Cl.³ C25D *3/46*

U.S. Cl. 204—46 R **5 Claims**

1. In an ammonia-sulfamate silver electroplating bath, a brightening composition consisting essentially of a pyridine-monocarboxylic acid or amide in a concentration of 0.5 to 10.0 g/l, in combination with at least one dye selected from the group consisting of an azo dye, an acid anthraquinone dye, and an arylamino dye wherein the dye is present in a concentration of 0.01 to 2.0 g/l.

4,279,709

PREPARATION OF POROUS ELECTRODES

John M. McIntyre, and Donald L. Caldwell, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 8, 1979, Ser. No. 37,206

Int. Cl.³ C25B *1/34, 11/02, 11/04, 11/10*

U.S. Cl. 204—98 **13 Claims**

1. An improvement in the process for preparing electrodes having a porous coating including the steps of

(a) coating an electroconductive electrode substrate with an admixture of:

(1) an electroconductive metal; and

(2) a pore former; and

(b) removing the pore former from the electrode coating, wherein the improvement consists of removing the pore former while the electrode is in use in an electrolytic cell.

4,279,710

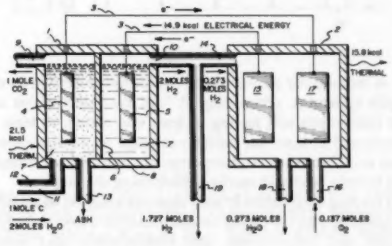
METHOD OF GASIFYING CARBONACEOUS MATERIALS

Robert W. Coughlin, Bethlehem, Pa., assignor to University Patents, Inc., Norwalk, Conn.

Continuation of Ser. No. 840,567, Oct. 11, 1977, abandoned. This application Nov. 5, 1979, Ser. No. 91,660

Int. Cl.³ C25B *1/02, 5/00, 1/00*

U.S. Cl. 204—101 **10 Claims**



1. A method of electrochemically oxidizing a carbonaceous material at an anode of an electrolysis cell and simultaneously producing a useful fuel or chemical at the cathode of said cell, the overall energy change accomplished by said electrolysis cell being supplied in part by the oxidation of said carbonaceous material at said anode and in part by electrical energy produced by a fuel cell fueled by at least a portion of said useful fuel or chemical produced at said cathode by said electrolysis cell, said fuel cell and said electrolysis cell being electrically interconnected by virtue of having shared or common electrodes.

4,279,711

AQUEOUS ELECTROWINNING OF METALS

Paul H. Vining, 1220 Lee Dr., Coraopolis, Pa. 15108; Jack A. Scott, 456 Riverside Dr., and Paul F. Duby, 560 Riverside Dr., both of New York, N.Y. 10027

Filed Jan. 21, 1980, Ser. No. 113,761

Int. Cl.³ C25C *1/00, 1/08, 1/12, 1/16*

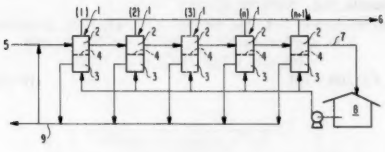
U.S. Cl. 204—105 R **15 Claims**

1. A method for aqueous electrowinning of a metal, said method including the steps of immersing an anode and a cathode in an electrolyte solution; said solution comprising water, ions of said metal, and a fuel which is soluble or which can be dispersed in the electrolyte and which will be oxidized at the anode; said anode having a catalytically active surface for the promoting of the reaction of said fuel; passing a direct electric current through said solution thereby to deposit said metal on said cathode, and periodically reversing or interrupting said electric current for a period of time less than 10% of the time the electric current is passed in the direction to deposit said metal on said cathode, the time between each of said periodically reversing or interrupting said current being from 30 seconds to 10 minutes so as to cause the reaction at the anode to be substantially limited to the electro-oxidation of said fuel.

4,279,712
METHOD FOR ELECTROLYZING HYDROCHLORIC ACID

Hitoshi Satoh, Kashiwa, and Shohei Kosaka, Yokohama, both of Japan, assignors to Chlorine Engineers Corporation, Ltd., Tokyo, Japan

Filed Feb. 4, 1980, Ser. No. 117,930
Claims priority, application Japan, Feb. 2, 1979, 54-10313
Int. Cl.[3] C25B *1/26, 1/02*
U.S. Cl. 204—128 3 Claims



1. A method for electrolyzing hydrochloric acid in an electrolysis apparatus, comprising at least two electrolysis cells, each electrolysis cell having at least one anode, at least one cathode and at least one cation exchange membrane therebetween to define an anode compartment and a cathode compartment therein, and said method comprising the steps of

(a) feeding hydrochloric acid aqueous solution as a starting material into the anode compartment of a first electrolysis cell and electrolyzing said hydrochloric acid aqueous solution therein,

(b) feeding hydrochloric acid aqueous solution discharged from said anode compartment of said first electrolysis cell into the anode compartment of a second electrolysis cell and electrolyzing said hydrochloric acid aqueous solution therein,

(c) feeding hydrochloric acid aqueous solution discharged from the anode compartment of the last electrolysis cell of said electrolysis apparatus into the cathode compartment of each of said electrolysis cells in said electrolysis apparatus,

(d) and further, for any additional electrolysis cells present in addition to said first and said second electrolysis cells, subsequent to step (b) and prior to step (c), sequentially feeding hydrochloric acid aqueous solution discharged from the anode compartment of a preceding electrolysis cell into the anode compartment of a subsequent electrolysis cell and electrolyzing said hydrochloric acid aqueous solution therein, and

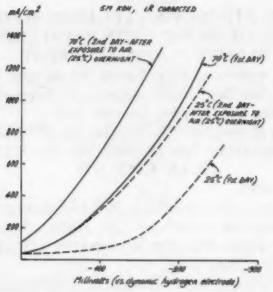
(e) collecting chlorine gas generated in the anode compartments and hydrogen gas generated in the cathode compartments.

4,279,713
METHOD OF CATALYSING THE EVOLUTION OF GASEOUS HYDROGEN

Alfred C. C. Tseung, and Maurice C. M. Man, both of London, England, assignors to National Research Development Corporation, London, England

Filed Jun. 22, 1979, Ser. No. 116,676
Int. Cl.[3] C25B *11/06, 1/04*
U.S. Cl. 204—129 3 Claims

1. A method of catlysing the evolution of gaseous hydrogen formed by alkaline water electrolysis in an aqueous alkali electrolysis cell, said method comprising using as the catalyst a cathode coated with particles whose surfaces to a depth of at least 20 Angstroms are sulphur compounds of two metals

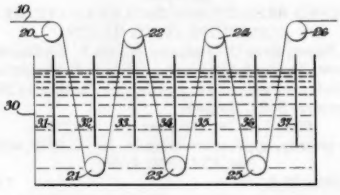

mA/cm²
5M KOH, iR CORRECTED
70°C (2nd DAY- AFTER EXPOSURE TO AIR (25°C) OVERNIGHT
70°C (1st DAY)
25°C (2nd DAY- AFTER EXPOSURE TO AIR (25°C) OVERNIGHT
25°C (1st DAY)
Millivolts (vs. dynamic hydrogen electrode)

selected from the group consisting of cobalt, nickel, iron and manganese.

4,279,714
AC ETCHING OF ALUMINUM CAPACITOR

Mulk A. Arora, and John J. Randall, Jr., both of Williamstown, Mass., assignors to Sprague Electric Company, North Adams, Mass.

Filed Sep. 15, 1980, Ser. No. 187,241
Int. Cl.[3] C25F *3/04, 3/14*
U.S. Cl. 204—129.9 4 Claims



1. A process for the electrolytic etching of aluminum electrolytic capacitor foil comprising passing the foil between electrodes supplied with alternating current in a bath containing 0.7 to 2 moles/liter hydrochloric acid, 0.2 to 0.5 moles/liter hydrated aluminum trichloride, and 0.02 to 0.4 moles/liter phosphate ion at a temperature of 35° to 55° C.

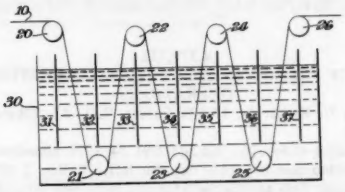
4,279,715
ETCHING OF ALUMINUM CAPACITOR FOIL

Mulk A. Arora; John J. Randall, Jr., and Walter J. Bernard, all of Williamstown, Mass., assignors to Sprague Electric Company, North Adams, Mass.

Filed Sep. 15, 1980, Ser. No. 187,271
Int. Cl.[3] C25F *3/04, 3/14*
U.S. Cl. 204—129.9 7 Claims

1. A process for etching aluminum electrolytic capacitor foil

comprising electrolytically etching said foil using alternating current in a bath containing 1.0 to 1.8 M hydrochloric acid,



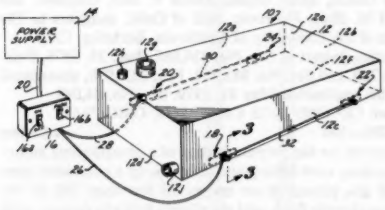
0.25 to 0.5 M hydrated aluminum trichloride, 0.2 to 1.0 M phosphoric acid, and 1.0 to 2.0 M chromium trioxide.

4,279,716

ODOR CONTROL SYSTEM

Ronald A. Horst, and Ross R. Hedrich, both of Newport Beach, Calif., assignors to Odor Control Systems, Inc., Newport Beach, Calif.

Filed Feb. 26, 1980, Ser. No. 124,783
Int. Cl.³ C25B 9/00
U.S. Cl. 204—149 **3 Claims**



1. An odor control system for a tank for holding solid and liquid excrement comprising in combination,

a tank formed with a bottom wall and at least two opposite sidewalls,

at least one pair of electrodes each of which is generally rectangular in shape and individually positioned in a separate one of said sidewalls with a longer dimension thereof parallel to and in close proximity to said bottom wall, said electrodes being mounted in substantially parallel relation in opposed alignment,

a source of direct current electrical power for connection to said electrodes,

timing means operatively interposed between said source and said electrodes to automatically connect the source to said electrodes and to automatically disconnect the same following a predetermined interval of time,

and manual override means for said timing means whereby said electrodes can be connected to said source irrespective of said automatic operation.

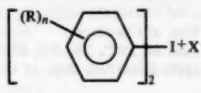
4,279,717

ULTRAVIOLET CURABLE EPOXY SILICONE COATING COMPOSITIONS

Richard P. Eckberg, Round Lake, and Ronald W. LaRochelle, Clifton Park, both of N.Y., assignors to General Electric Company, Waterford, N.Y.

Filed Aug. 3, 1979, Ser. No. 63,648
Int. Cl.³ C08F 2/46; C08G 77/08
U.S. Cl. 204—159.13 **8 Claims**

1. An ultraviolet-curable silicone coating composition comprising: (a) a one-crosslinked epoxy functional dialkyl epoxy chainstopped polydialkyl-alkyl epoxy siloxane copolymer silicone intermediate fluid having a viscosity of approximately 10 to 10,000 centipoise at 25° C.; and (b) an amount of bis-(aryl) iodonium salt having the following formula,



wherein X is selected from the group consisting of SbF_6, AsF_6, PF_6, and BF_4, and wherein R is a $C_{(4-20)}$ organo radical selected from the group consisting of alkyl and haloalkyl radicals and mixtures thereof and n is a whole number equal to 1 to 5 inclusive, which is effective for catalyzing an ultraviolet light initiated cure reaction of said polydiorganosiloxane silicone intermediate fluid.

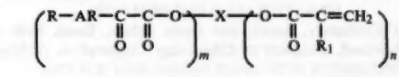
4,279,718

ARYL-GLYOXYLOYLOXYALKYLACRYLATES AND THEIR USE IN PHOTOPOLYMERIZABLE BINDERS

Karl-Ernst Schuster, Kerken; Hans Rudolph, Krefeld; Wolfram Mayer, Krefeld, and Hans J. Rosenkranz, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 46,941, Jun. 8, 1979. This application Oct. 1, 1979, Ser. No. 80,191
Claims priority, application Fed. Rep. of Germany, Jun. 14, 1978, 2825955
Int. Cl.³ C08F 2/48, 2/50
U.S. Cl. 204—159.15 **3 Claims**

1. A method of initiating photopolymerization of olefinically unsaturated photopolymerizable monomeric or oligomeric compounds or mixtures thereof comprising using as the initiator a compound of the formula

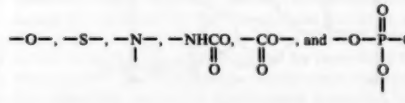


wherein

Ar is phenyl or naphthyl,

R is hydrogen, alkyl with 1–4 carbon atoms, alkoxy with 1–4 carbon atoms, halogen, dialkylamino with 1–4 carbon atoms in each alkyl group, carboxyl, or alkoxycarbonyl with 1–4 carbon atoms in the alkoxy group,

X is alkylene having 3 to 6 carbon atoms or alkylene having 6 to 72 carbon atoms interrupted by at least one member selected from the group consisting of



and the precursor of X being a polyol having 3–6 hydroxyls and having a hydroxyl number from 100 to 1850,

R_1 is hydrogen or methyl,

n is a number with a value from about 2 to about 5, and

n+m is a number with a value from about 3 to about 6.

4,279,719
PHOTOPOLYMERIZATION METHOD WITH SYMMETRIC AZO ALKANES

Otto Hitzler, Erzhausen, and Winfried Wunderlich, Rossdorf, both of Fed. Rep. of Germany, assignors to Röhm GmbH, Darmstadt, Fed. Rep. of Germany

Filed Jun. 12, 1979, Ser. No. 47,769

Claims priority, application Fed. Rep. of Germany, Jul. 15, 1978, 2831159

Int. Cl.³ C08F *2/50*; C07C *107/02*

U.S. Cl. 204—159.23 **6 Claims**

1. A method for photopolymerizing an ethylenically unsaturated free radically-polymerizable compound which comprises irradiating said compound, in admixture with a symmetric azoalkane comprising tertiary alkyl groups each having a molecular weight from 71 to 97 bound to the azo group, with light having a wavelength from 200 nanometers to 500 nanometers at such a light intensity that the polymerization occurs at temperature below 100° C.

4,279,720
PHOTOCURABLE COMPOSITION

Godwin Berner, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

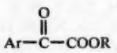
Filed Jul. 2, 1979, Ser. No. 54,129

Claims priority, application Switzerland, Jul. 13, 1978, 7621/78

Int. Cl.³ C08F *4/00, 2/50*

U.S. Cl. 204—159.23 **8 Claims**

1. A photocurable composition consisting essentially of (a) one or more ethylenically unsaturated, photocurable compounds, (b) at least one photo-initiator of the formula I



(I)

in which Ar is phenyl and R is methyl or ethyl, and (c) at least one light stabiliser from the category of the polyalkylpiperidine derivatives.

4,279,721
MERCAPTOPHENYL KETONES AS INITIATORS FOR THE PHOTOPOLYMERIZATION OF ETHYLENICALLY UNSATURATED COMPOUNDS

Rudolf Kirchmayr, Aesch, and Louis Felder, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed May 16, 1979, Ser. No. 39,464

Claims priority, application Switzerland, May 23, 1978, 5596/78

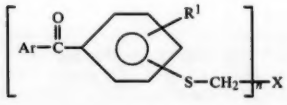
Int. Cl.³ C08F *2/46*

U.S. Cl. 204—159.24 **5 Claims**

1. A photopolymerizable composition comprising

(a) at least one ethylenically unsaturated compound; and

(b) a mixture in a 4:1 to 1:4 ratio by weight of a compound of formula I



I

in which n is 1, Ar is phenyl, 2-furyl, 2-thienyl, 2-pyridyl or phenyl which is substituted by C_1–C_4 alkyl, C_1–C_4 alkoxy, —COO— (C_1–C_4 alkyl), $-SCH_2X$ or benzoyl, R^1 is hydrogen and X is one of the groups $-CH_2OH$, $-CH(CH_3)-OH$, $-CH(OH)-CH_2OH$, $-CH_2-NR^3R^4$ or $-CH_2-O-CO-R^5$, in which R^3 and R^4 are C_1–C_4 alkyl or hydroxyethyl, or together are 1,5-pentylene, and R^5 is C_1–C_4 alkyl, phenyl, vinyl or propenyl, with an organic amine; and wherein the amount of component (b) is from 0.5 to 20% by weight of total composition.

4,279,722
USE OF MICROWAVES IN PETROLEUM REFINERY OPERATIONS

Chalmer G. Kirkbride, 13 Elk Forest, R.D. #2, Elkton, Md. 21921

Continuation of Ser. No. 954,303, Oct. 24, 1978, abandoned, and a continuation-in-part of Ser. No. 831,170, Sep. 7, 1977, abandoned. This application Mar. 17, 1980, Ser. No. 131,167

Int. Cl.³ C10G *45/72, 47/36, 35/04*; C07C *4/00*

U.S. Cl. 204—162 R **11 Claims**

1. A method of operating a catalytic petroleum refinery process comprising performing a catalytic operation for conversion of liquid hydrocarbons derived from petroleum by exposing said liquid hydrocarbons mixed with catalyst to sufficient microwave energy in the frequency range of about 2.5×10^9 to 10^{12} hertz in the absence of coal particles to enhance conversion of said liquid hydrocarbons.

4,279,723
POLYMERIZATION OF INORGANIC ELEMENT-CONTAINING MONOMERS USING PLASMA

Yoshihito Osada, Mito, Japan; Alexis T. Bell, Oakland, and Mitchel M. Shen, Piedmont, both of Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Continuation-in-part of Ser. No. 934,855, Aug. 18, 1978, Pat. No. 4,212,719, and Ser. No. 882,124, Feb. 28, 1978, abandoned. This application May 31, 1979, Ser. No. 44,048

Int. Cl.³ C08F *2/52*; C01B *25/10*; C08G *79/02*

U.S. Cl. 204—164 **4 Claims**

1. A method for the polymerization of a phosphazene monomer comprising establishing and maintaining a contained zone of ionized gas plasma at an energy of less than 100 eV by applying an electric field, said gas plasma being in contact with the surface of a non-vapor volume of said phosphazene monomer to cause it to polymerize.

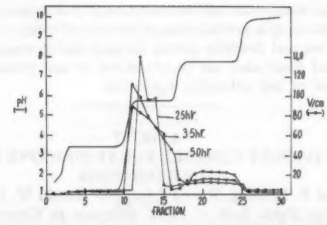
4,279,724
PREPARATIVE ELECTROFOCUSING IN FLAT BED GRANULATED POLYSACCHARIDE GELS

Milton T. W. Hearn, P.O. Box 913, Dunedin, New Zealand, and Ross L. Prestidge, University Station, Birmingham, Ala. 35294

Filed Jul. 18, 1979, Ser. No. 58,686

Int. Cl.³ G01N *27/26*

U.S. Cl. 204—180 G **19 Claims**



1. A preparative electrofocusing system for preparative resolution of a sample, said system comprising a flatbed granular polysaccharide gel having a high sample-loading capacity suspended in a buffer mixture, a catholyte at one side of said flatbed gel and an anolyte at the other side thereof, and a source of direct current between said catholyte and said anolyte, said buffer mixture comprising a combination of at least

four amphoteric members selected from the group consisting of: Glu, LA, PA, Pyr, MES, ADA, Bistris, MOPS, ACES, Imid, HEPES, TES, EPPS, TEA, TAPS, Glygly, Tricine, Bicine, Asn, Tris, AEPD, AMP, NH_3, His, Gly, Tau, B-Ala, EA, Lys, TA, GACA and GABA.

4,279,725

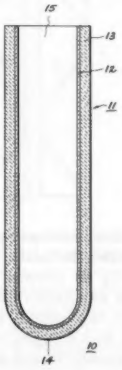
ELECTROFORMING COMPOSITE BETA, MAINLY BETA"-ALUMINA ARTICLES

Robert W. Powers, Schenectady, and John C. Bielawski, Ballston Lake, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 77,016, Sep. 19, 1979, which is a division of Ser. No. 32,114, Apr. 23, 1979, abandoned. This application Sep. 5, 1980, Ser. No. 184,361

Int. Cl.³ C25D *1/20, 1/14*

U.S. Cl. 204—181 F **3 Claims**



1. A method of producing a composite beta, mainly beta"-alumina article which comprises providing a first suspension of beta-alumina particles and soda alumina particles with a soda content from 14 to 30 weight percent, providing lithia in at least one of the types of particles, the majority of the particles having a diameter in the range of 1 to 2 microns in an organic liquid having a dielectric constant at 25° C. from 12 to 24, electrophoretically codepositing the particles from the first suspension as a dense deposit containing from 0.1 to 1.0 weight percent lithia onto a charged mandrel in a DC field of from 100 to 10,000 volts per centimeter thereby forming between 1 to 15 percent of the total thickness of the composite deposit, providing a second suspension of mainly beta"-alumina particles and soda alumina particles with a soda content from 14 to 30 weight percent, providing lithia in at least one of the types of particles, the majority of the particles having a diameter in the range of 1 to 2 microns in an organic liquid having a dielectric constant at 25° C. from 12 to 24, removing the mandrel from the first suspension, inserting the mandrel in the second suspension, electrophoretically codepositing the particles from the second suspension as a dense deposit containing from 0.1 to 1.0 weight percent lithia onto the charged mandrel in a DC field of from 100 to 10,000 volts per centimeter thereby forming the remainder of the composite deposit, drying the composite deposit on the mandrel, removing the composite deposit from the mandrel, and sintering the composite deposit in an oxidizing atmosphere at a temperature between 1500° and 1775° C. resulting in a dense, fine-grain sintered composite beta, mainly beta"-alumina article.

4,279,726

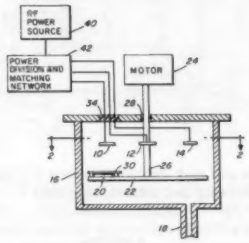
PROCESS FOR MAKING ELECTROLUMINESCENT FILMS AND DEVICES

Donald H. Baird, Newton, and Martin S. McDonough, Andover, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Jun. 23, 1980, Ser. No. 162,454

Int. Cl.³ C23C *15/00*

U.S. Cl. 204—192 P **5 Claims**



1. A method for making a low voltage dc electroluminescent film comprising the steps of:

placing a plurality of discrete sputtering targets, including a zinc sulfide target, a manganese target, and a copper target, and a substrate in vacuum-tight vessel containing a gas at a pressure suitable for sputtering, said targets being placed in a circular arrangement;

applying to said targets voltages which cause sputtering of said target materials;

rotating said substrate sequentially into proximity to each of said sputtering targets such that said substrate is sequentially exposed to said targets, said target materials are sequentially sputtered onto said substrate and an electroluminescent film, including material from each of said targets, is formed on said substrate; and

controlling the rate of sputtering of said copper target so as to provide a copper concentration in said electroluminescent film in the range between one weight percent and two weight percent,

whereby said electroluminescent film is operable at low dc voltages.

4,279,727

DEVICE FOR MEASURING THE EMISSION OF GASEOUS INORGANIC FLUORINE OR CHLORINE COMPOUNDS

Egmont Scheubeck; Gertrud Blazevic, and Marianne Boehner, all of Erlangen, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Dec. 19, 1979, Ser. No. 105,217

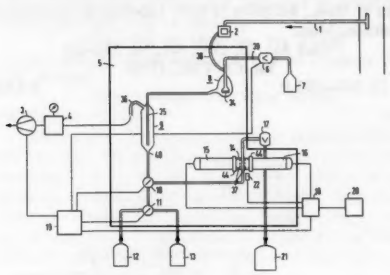
Claims priority, application Fed. Rep. of Germany, Dec. 28, 1978, 2856490

Int. Cl.³ G01N *27/26*

U.S. Cl. 204—195 R **4 Claims**

1. A device for continuously measuring the emission of gaseous inorganic fluorine or chlorine compounds, comprising means for continuously drawing exhaust gas to be analyzed into the device, receiving means within said device for continuously receiving said exhaust gas and for receiving a liquid for absorbing the inorganic fluorine or chlorine compounds in said gas, separating means for continuously separating the liquid containing absorbed inorganic fluorine or chlorine compounds from gas, means for continuously, directly measuring quantities of said fluorine or clorine compounds in said liquid by potentiometric methods and valve means for directing the flow of said liquid and liquid or liquids used for calibration of said device, said receiving, separating, measuring and valve means

being affixed in relative positions on a base or plate such that said receiving means is positioned vertically above said measuring means and said separating means is positioned intermediate said receiving and measuring means.



4,279,728

APPARATUS FOR DETERMINING ION CONCENTRATION

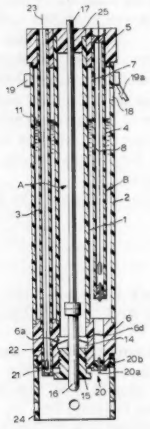
Yoshio Horii, Miyanohigashi, Japan, assignor to Horiba, Ltd., Kyoto, Japan

Filed Apr. 29, 1980, Ser. No. 144,932

Claims priority, application Japan, May 16, 1979, 54-66737[U]

Int. Cl.³ G01N *27/30, 27/36*

U.S. Cl. 204—195 R **6 Claims**



1. An apparatus for determining the concentration of ions in a solution, comprising:

an inner cylinder;

an outer cylinder concentrically positioned around said inner cylinder and defining with said inner cylinder a chamber for holding an internal solution of a comparison electrode;

an upper block and a lower block to which the upper and lower ends of said outer cylinder are sealingly connected, said blocks having holes therethrough and the ends of said inner cylinder being sealingly attached to said blocks in said holes;

a comparison electrode tube depending from said upper block into said chamber and having a liquid junction in the lower end of said tube, said tube being open to said chamber adjacent the upper end thereof;

an internal electrode of the comparison electrode positioned within said comparison electrode tube and having a lead extending out of the upper end of said tube through said upper block;

a measuring electrode removably sealingly mounted in said hole in said lower block and extending downwardly from said lower block; and

a further liquid junction mounted in said lower block and extending from said chamber through said lower block.

4,279,729

ANODE AND METHOD OF CONSTRUCTION

James B. Bushman, Medina; James R. Dimond, Burton, and John Hennessy, Fairview Park, all of Ohio, assignors to Harco Corporation, Medina, Ohio

Continuation of Ser. No. 11,188, Feb. 12, 1979. This application Apr. 14, 1980, Ser. No. 140,013

Int. Cl.³ C23F *13/00*; C25B *11/00*; H01R *43/00*

U.S. Cl. 204—196 **52 Claims**

1. A method of making a cathodic protection anode comprising the steps of extruding the anodic material into a continuous elongate body having an extruded hole extending entirely through the elongate axis thereof from one end of the anodic material to the other, and securing an electrical connector in the extruded hole on such elongate axis with an electrical lead connected to such connector, and then filling the hole with sealant.

4,279,730

EQUIPMENT FOR CONTINUOUS PLATING

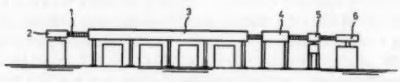
Francis X. Noz, Douglaslaan 5, Rosmalen, Netherlands

Filed Dec. 17, 1979, Ser. No. 104,293

Claims priority, application Netherlands, Dec. 15, 1978, 7812196

Int. Cl.³ C25D *17/00, 17/06, 21/10*

U.S. Cl. 204—206 **17 Claims**



1. In a device for selective electrodeposition of metals or flat stock or on laddered or bandoliered component strips having at least one station adapted to contain electrolyte through which the component strips can be transported lengthwise, the improvement comprising a longitudinal guide means for component strips which guide means is provided with a slot-shaped chamber, the lower end of said chamber extending down into said station to a level below the normal operating level in said station of the electrolyte contained therein during operation of said device, said guide means having apertures for introducing pressurized gas or air into said slot-shaped chamber, and tubes with holes, said tubes being located in such a position that during operation electrolyte recirculated through a transport pump can be jetted onto such a portion of the metal or compo-

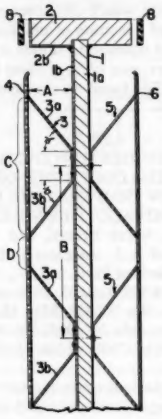
nent strip as extends below said slot-shaped chamber of said guide means into the electrolyte.

4,279,731

NOVEL ELECTROLYZER

Alberto Pellegri, Luino, Italy, assignor to Oronzio deNora Impianti Elettrichimici S.p.A., Milan, Italy

Filed Mar. 10, 1980, Ser. No. 128,972
Int. Cl.³ C25B *9/00, 11/04, 11/10*
U.S. Cl. 204—254 **12 Claims**



1. A bipolar diaphragm or membrane electrolyzer comprising a housing containing an end anode element, an end cathode element and a plurality of bipolar elements with their major dimensions lying in a substantially vertical plane and comprised of a bipolar wall separating the anode compartment and the cathode compartment and vertical foraminous electrodes parallel positioned a certain distance from the bipolar wall, diaphragms or membranes separating the anodes and cathodes, a series of baffles distributed along the entire depth of the electrode compartment and extending from the bipolar wall to the foraminous electrode to form a series of vertical flow channels extending over a large portion of the height of the wall, the said baffles being alternately inclined one way and the other way with respect to the vertical plane normal to the bipolar wall plane and spaced from one another whereby the ratio of the electrode surface intercepted by the edges of two baffles laterally defining a vertical flow channel to the flow section thereof is different from the ratio of the electrode surface intercepted by the edge of one of said two baffles and the edge of the adjacent baffle in the series and the flow section of the adjacent channel in the series to the said vertical flow channel.

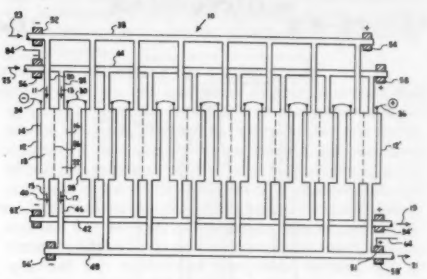
4,279,732

ANNULAR ELECTRODES FOR SHUNT CURRENT ELIMINATION

Richard J. Bellows, and Patrick G. Grimes, both of Westfield, N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Feb. 19, 1980, Ser. No. 122,193
Int. Cl.³ H01M *8/00;* **C25C** *7/00*
U.S. Cl. 204—269 **40 Claims**

1. An electrochemical device, comprising:
at least one common manifold;
a plurality of cells fluidically communicating through said one common manifold;
a common electrolyte for said cells which is disposed in said one common manifold and which provides an electrical electrolytic conductive bypass path around said cells which is capable of resulting in undesirable shunt currents; and
at least one annular protective electrode supported by said one common manifold having means for applying a protective current about the manifold which has a substantially uniform current density profile through said electrolyte along said manifold to provide effective reduction of said shunt currents with a minimized power consumption.

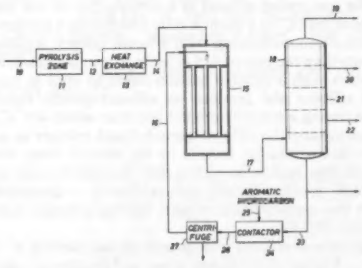


4,279,733

COKING PREVENTION

John E. Gwyn, Katy, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Dec. 21, 1979, Ser. No. 106,060
Int. Cl.³ C10G *9/16*
U.S. Cl. 208—48 R **2 Claims**

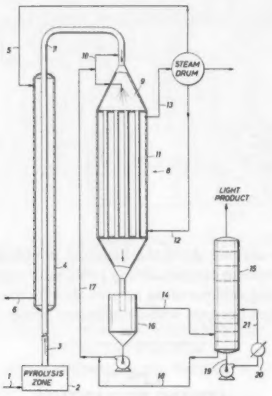


1. A process comprising
(a) quenching the effluent from a hydrocarbon pyrolysis reactor by contacting the effluent in a quench zone with a quench liquid, and producing a quenched effluent and quench liquid having a temperature not less than 370° C.;
(b) passing the quenched effluent and at least the bulk of the quench liquid as a feed to a fractional distillation zone, and fractionally distilling the feed;
(c) continuously removing a bleed stream containing a bottoms fraction of the fractional distillation zone;
(d) contacting said fractionator bottoms bleed stream with a light aromatic hydrocarbon liquid to produce a mixture of light aromatic hydrocarbon and fractionator bottoms, and insoluble materials;
(e) removing the insoluble materials from the mixture of light aromatic hydrocarbon liquid, fractionator bottoms and insoluble materials, to produce a quench liquid mixture containing fractionator bottoms and light aromatic hydrocarbons;
(f) passing the quench liquid mixture to the quench zone of step (a), and employing the quench liquid mixture as the quench liquid of step (a).

4,279,734
QUENCH PROCESS

John E. Gwyn, Katy, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Dec. 21, 1979, Ser. No. 106,291
Int. Cl.[3] C10G 9/16, 9/20
U.S. Cl. 208—48 Q 7 Claims



1. A method for recovering heat energy from the effluent of a hydrocarbon pyrolysis reactor comprising

passing the effluent through a first indirect heat exchange pre-quench zone to lower the temperature of the effluent and produce a pre-cooled effluent having a temperature not less than about 540° C., and high pressure steam;

passing the pre-cooled effluent at a temperature of not less than about 540° C. to a quench zone comprising a moderator section communicating with a liquid quench section, and contacting the pre-cooled effluent first in the moderator section with a suitable quench liquid to cool te pre-cooled effluent and produce an effluent-quench liquid mixture having a temperature not less than about 400° C., and then passing the effluent quench liquid mixture to an indirect heat exchange section of the quench zone, the heat exchange section providing heat transfer to water to form high pressure steam, and producing a quenched effluent and quench liquid mixture having a temperature of at least 370° C.;

passing quenched effluent and quench liquid mixture as a feed to a fractional distillation zone, and fractionally distilling the feed;

continuously removing a bleed steam from the lower portion of the fractional distillation zone, passing the bleed stream to a heat exchnge zone and recovering heat from the bleed stream, and producing a cooler bleed stream, and returning at leat a portion of the cooler bleed stream to the fractional distillation zone.

4,279,735
PASSIVATION OF METALS CONTAMINATING A USED CRACKING CATALYST WITH CERTAIN ANTIMONY CARBONATES AND THEIR THIO ANALOGUES

Brent J. Bertus; Dwight L. McKay, and H. Wayne Mark, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 926,696, Jul. 25, 1978, Pat. No. 4,238,862. This application Apr. 25, 1980, Ser. No. 143,674
Int. Cl.[3] C10G 9/32, 9/16
U.S. Cl. 208—113 8 Claims

1. A method for passivating a used hydrocarbon cracking catalyst which comprises adding to said used catalyst at least one antimony carbonate wherein the carbonate is at least one having the formula $(RXCXX)_3Sb$, wherein each X is independently selected from oxygen and sulfur, and R contains not more than 18 carbon atoms.

4,279,736
METHOD OF HYDROREFINING ASPHALTENIC HYDROCARBON FEEDSTOCKS

William K. T. Gleim, 1250 NW. 120th St., Seattle, Wash. 98177

Filed Oct. 23, 1979, Ser. No. 87,506
Int. Cl.[3] C10G 45/16
U.S. Cl. 208—215 15 Claims

1. A method of hydrorefining an asphaltenic charge stock in a hydrogen atmosphere which comprises effecting said reaction in the presence of a mixture of titanium sulfides wherein the molecular ratio of titanium to sulfide is from about 1:2 to about 1:3 and in the presence of from about 10 to about 25 mol. percent hydrogen sulfide based on said hydrogen.

4,279,737
HYDRODESULFURIZATION OVER CATALYSTS COMPRISING CHALCOGENIDES OF GROUP VIII PREPARED BY LOW TEMPERATURE PRECIPITATION FROM NONAQUEOUS SOLUTION

Russell R. Chianelli, North Branch, and Theresa Pecoraro, Middletown, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Division of Ser. No. 14,589, Feb. 23, 1978, abandoned, which is a continuation of Ser. No. 797,011, May 16, 1977, abandoned. This application Feb. 26, 1980, Ser. No. 124,956
Int. Cl.[3] C10G 45/10, 45/52
U.S. Cl. 208—217 20 Claims

1. In a process for the hydrodesulfurization of hydrocarbon feed streams containing organic sulfur and nitrogen comprising contacting said feed stream with a catalyst in the presence of hydrogen or a hydrogen donor solvent for a time at a temperature and pressure sufficient to cause the hydrodesulfurization of the feed stream, the improvement comprising using as the catalyst a composition of the formula MX_y wherein M is ruthenium, rhodium, iridium and osmium, X is a chalcogen selected from the group consisting of sulfur, selenium, tellurium and mixtures thereof and y is a number ranging from about 0.1 to about 3 which composition is prepared by reacting in the absence of aqueous solutions a ruthenium, rhodium, iridium or osmium salt with a source of sulfide, selenide or telluride ion selected from the group consisting of Li_2X, K_2X, Na_2X, LiHX, KHX, NaHX, $(NH_4)_2X$, $(NH_4)HX$, $(RNH_3)_2X$, $(RR^1NH_2)_2X$, $(R\,R^1R^{11}NH)_2X$ wherein R, R^1 and R^{11} are the same or different and are selected from the group consisting of C_1 to C_{20} alkyl and C_6–C_{20} aryl groups and X is the chalcogen selected from the group consisting of sulfur, selenium and tellurium, at a temperature of from −78° to 400° C.

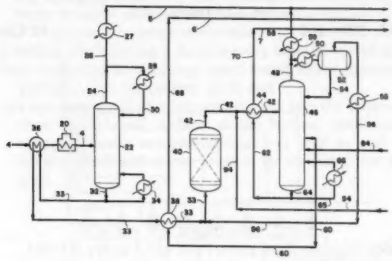
4,279,738
METHOD AND APPARATUS FOR THE RECOVERY OF REFINED PETROLEUM PRODUCTS FROM PIPELINE MIXTURES

Robert F. Click, 8035 S. 79th E. Ave., Tulsa, Okla. 74133

Filed Feb. 29, 1980, Ser. No. 126,034
Int. Cl.[3] C10G 29/04, 25/00, 7/00
U.S. Cl. 208—253 8 Claims

1. A method of recovering refined petroleum products from an interface pipeline mixture containing a low boiling gasoline having tetraethyl and tetramethyl lead components, a medium boiling aviation fuel, and a high boiling residual petroleum product comprising the steps of first preheating a fluid stream containing said interface mixture, introducing said fluid stream into a first fractionation tower operating at a first temperature below the degrading point of the lead components and below the initial boiling point of said aviation fuel, separating the majority of said gasoline and a major quantity of said lead components from said fluid stream in said first tower, recovering said majority of gasoline along with said major quantity of

said lead components as a first overhead stream from said first tower leading into a main gasoline recovery stream, recovering as a first bottoms stream from said first tower a minor fraction of said gasoline along with a minor quantity of said lead components in addition to said aviation fuel and said residual petroleum product, introducing said first bottoms stream into a bottom-fed reactor vessel having a catalyst bed, said catalyst bed containing a catalyst of the type capable of chemically adsorbing said lead components on its surface while said first bottoms stream is in a liquid state and at a temperature not exceeding the initial boiling point of said lead



components, withdrawing a second overhead stream from the top of said reactor vessel and heating the same to a second temperature near said initial boiling of said aviation fuel, introducing the heated second overhead stream into a second fractionation tower wherein said minor fraction of gasoline and a small fraction of said aviation fuel are carried off as overhead products from said main gasoline recovery stream, recovering said residual petroleum product as a second bottoms stream from said second tower, and then recovering the remaining fraction of said aviation fuel as an intermediate side stream from said second tower.

4,279,739

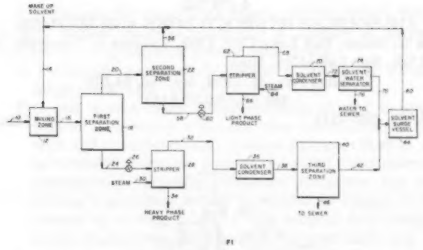
PROCESS FOR SEPARATING BITUMINOUS MATERIALS

Jack W. Roach, Oklahoma City, Okla., assignor to Kerr-McGee Refining Corporation, Oklahoma City, Okla.

Filed Jun. 30, 1980, Ser. No. 164,606

Int. Cl.³ C10C *3/00;* C10G *21/78;* B01D *3/38*

U.S. Cl. 208—309 **23 Claims**



6. A process comprising:

separating an admixture comprising a bituminous material and a solvent in a first separation zone into a fluid-like first light phase comprising solvent and at least a portion of said bituminous material of said admixture and a fluid-like first heavy phase comprising the remainder of said bituminous material and some solvent by maintaining the admixture at an elevated temperature and pressure;

introducing said first light phase into a second separation zone maintained at a temperature level above the temperature in said first separation zone and at an elevated pressure to effect a separation of said first light phase into a second light phase comprising solvent and a second heavy phase comprising at least a portion of said fluid-like bituminous material of said first light phase and some solvent;

reducing the pressure of said fluid-like second heavy phase to vaporize at least a portion of the solvent present therein and form a mixture comprising fluid-like bituminous material in association with said vaporized solvent together with undesired fine particles of bituminous material dispersed therein;

introducing said mixture into a steam stripper;

introducing steam into said steam stripper to contact said mixture to vaporize at least a portion of any nonvaporized solvent remaining therein and to form at least one stream comprising fluid-like bituminous material and one other stream comprising steam and vaporized solvent together with said undesired fine particles of bituminous material;

introducing said stream comprising steam, vaporized solvent and said fine particles of bituminous material into a condenser to form a liquid mixture comprising water, solvent, solidified fine particles of bituminous material and an emulsion of water and bituminous material;

introducing said liquid mixture comprising said water, solvent, solids and emulsion into a third separation zone to separate said liquid mixture into at least three fractions comprising a solvent fraction, an emulsion fraction and a water fraction which includes the solidified fine particles of bituminous material; and

recovering said solvent fraction from said third separation zone, said solvent being substantially free of fine particles of bituminous material.

4,279,740

LIGHT-MATERIAL SEGREGATING METHOD AND APPARATUS

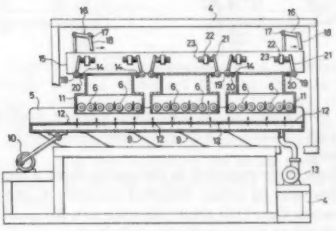
Keiichi Isogaya, Shizuoka, Japan, assignor to Marusho Industrial Co., Ltd., Tokyo, Japan

Filed Feb. 19, 1980, Ser. No. 122,797

Claims priority, application Japan, Feb. 19, 1979, 54/20867[U]

Int. Cl.³ B03C *7/04;* B07B *9/02*

U.S. Cl. 209—12 **12 Claims**



1. A method for separating light and heavy materials from one another comprising the steps of:

transporting materials to be separated on a conveyor past a set of parallel rollers;

applying a high voltage to said rollers;

rotating said rollers; and

sucking air through gaps between said rollers during rotation of said rollers, wherein said step of sucking air through gaps between said rollers comprises sucking air through covers disposed around upper portions of predetermined groups of rollers.

5. Apparatus for separating light and heavy materials comprising:

a conveyor for transporting materials to be separated;

a plurality of rollers disposed adjacent a portion of an upper surface of said conveyor, a predetermined gap being left between adjacent ones of said rollers;

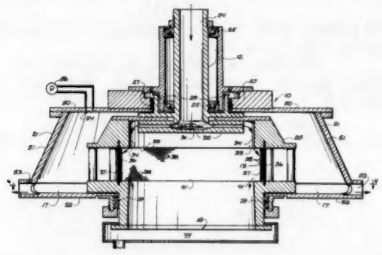
a cover disposed around said rollers and having an open portion on the side of said conveyor;
means for applying a high voltage to said rollers;
means for rotating said rollers; and
a suction pump coupled to, and operable to suck air through, said cover, said rollers being disposed in groups and wherein said cover comprises a plurality of cover sections, one of said cover sections covering a corresponding group of rollers.

4,279,741

METHOD AND APPARATUS FOR CENTRIFUGALLY SEPARATING A HEAVY FRACTION FROM A LIGHT WEIGHT FRACTION WITHIN A PULP MATERIAL

Thomas P. Campbell, Spokane, Wash., assignor to Intercontinental Development Corporation, Spokane, Wash.

Filed May 7, 1979, Ser. No. 36,517
Int. Cl.[2] B03B 5/12
U.S. Cl. 209—44 20 Claims



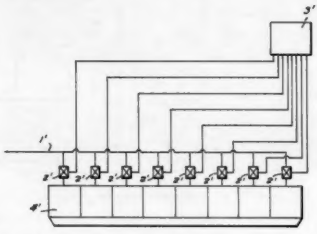
1. A centrifugal jig for separating a heavy fraction from a lightweight fraction of a pulp material, comprising:
a casing;
a hollow rotor mounted to the casing about a rotor axis;
a cylindrical jig screen mounted coaxially to the rotor for rotation therewith about the rotor axis for receiving pulp material to form a cylindrical jig bed;
means for rotating the rotor and cylindrical jig screen about the rotor axis at sufficient velocity to cause centrifugal loading on the cylindrical jig screen at least equal to ten times the force of gravity;
feed means for directing pulp material onto the cylindrical jig screen;
means for simultaneously directing positive fluid pulsations radially inward through the total circumference of the jig screen to form a uniform layered cylindrical pulsating fluidic bed of the pulp material on the cylindrical jig screen as it is rotated about the rotor axis;
discharge means adjacent the cylindrical jig screen adapted to receive a lightweight fraction of the pulp material; and
receiver means in communication with the exterior of the jig screen for receiving fluid and the heavy fraction of the pulp material from the jig screen during rotation of the rotor means.

4,279,742

METHOD OF AND APPARATUS FOR THE FLOTATION OF MINERAL RAW MATERIALS

Rumen V. Ivanov; Dobrin V. Nikolov, both of Sofia, Bulgaria; Ulrich Bilsing, Freiberg, German Democratic Rep.; Heinz Weber, Freiberg, German Democratic Rep., and Manfred Schmidt, Freiberg, German Democratic Rep., assignors to Institute po Physikochimia, Sofia, Bulgaria

Continuation-in-part of Ser. No. 862,450, Dec. 20, 1977, abandoned. This application Nov. 20, 1978, Ser. No. 962,045
Claims priority, application Bulgaria, Dec. 20, 1976, 36788; German Democratic Rep., Dec. 20, 1976, 196473
Int. Cl.[3] B03D 1/02
U.S. Cl. 209—166 10 Claims



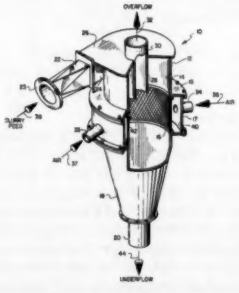
1. In a method of froth flotation of mineral raw materials, wherein the mineral raw materials are pretreated with at least one flotation agent and are subjected to treatment in an ore flotation machine with a rotor-stator apparatus provided with one or more cells which are always subjected to atmospheric pressure at the pulp level surface, the improvement which comprises alternately reducing and increasing the flow rate of the gas supplied for the flotation process in a plurality of the same repetitive cycles, the quantity of the gas supplied to the cells under the lower flow rate being from 1 to 90% of that supplied to the cells under the higher flow rate, and when the cells of the ore flotation machine are supplied with gas at the higher rate the cells contain a three-phase system composed of solid, liquid, and gas, and when the cells of the ore flotation machine are supplied with gas at the lower rate the cells contain a two-phase system composed of solid and liquid.

4,279,743

AIR-SPARGED HYDROCYCLONE AND METHOD

Jan D. Miller, Salt Lake City, Utah, assignor to University of Utah, Salt Lake City, Utah

Filed Nov. 15, 1979, Ser. No. 94,521
Int. Cl.[3] B04C 5/10
U.S. Cl. 209—211 11 Claims



1. A gas-sparged hydrocyclone apparatus comprising:
a substantially hollow cyclone body;

entry means for introducing a particulate mixture into the cyclone body, the particulate mixture being carried in a liquid phase;
overflow means for removing overflow product from the cyclone body;
underflow means for removing underflow product from the cyclone body;
a gas plenum surrounding at least a portion of the hollow cyclone body; and
a porous wall means separating the gas plenum from the hollow cyclone body, the porous wall in combination with a pressurized gas in the gas plenum thereby comprising sparging means for introducing gas into the cyclone body to assist in separating the particulate mixture.

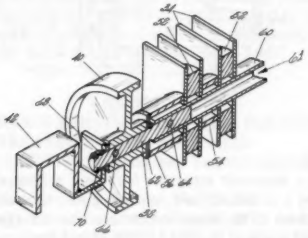
10. A cyclone separator comprising:
a hollow shell having a downwardly tapered lower section;
feed means for introducing liquid-based slurry material tangentially into the hollow shell; and
gas sparging means for introducing gas into the hollow shell from an external surface of the hollow shell, said gas sparging means comprising a porous wall as part of the hollow shell and a gas plenum surrounding the porous wall.

4,279,744

APPARATUS AND METHOD FOR REMOVING MAGNETIC ARTICLES FROM A FLOW OF LOOSELY PACKED MATERIAL

Lucien M. Antonwitsch, Summerland, Calif., assignor to Jerry Oldenkamp, Santa Barbara, Calif.

Filed Aug. 21, 1980, Ser. No. 180,047
Int. Cl.³ B03C *1/26*
U.S. Cl. 209—214 **21 Claims**



1. Apparatus for removing magnetic articles from a flow of loosely packed material containing a mixture of magnetic articles and non-magnetic articles comprising:
an elongated support shaft adapted to be rotated about its longitudinal axis;
first and second metal plates coaxially aligned in spaced parallel relationship with each other and coaxially aligned with and mounted on said elongated support shaft so as to be rotatable therewith, each of said metal plates extending substantially vertically outwardly therefrom and each having a periphery which is adapted to engage and be rotated by at least one of a said material flow being directed thereacross said elongated support shaft; and
a magnetic member coaxially aligned with and mounted on said elongated support shaft and located in the space between the first and second metal plates and in axial alignment with and contiguous said first and second metal plates, said magnetic member extending substantially vertically outwardly from said elongated support shaft and having a periphery spaced a predetermined distance from the periphery of each of said first and second metal plates, said magnetic member being formed of a magnetic material having a magnetic flux density of sufficient magnitude to magnetize each metal plate to produce a preshaped magnetic field emanating therefrom to attract and remove magnetic articles responsive to the magnetic field from a material flow being directed across said metal plates and to hold such removed magnetic articles against said metal plates as the metal plates move relative to the material flow being directed thereacross.

20. A method of removing magnetically attracted, reusable tableware and the like from a flow of loosely packed material containing a mixture of magnetic articles and non-magnetic articles including food and paper waste comprising the steps of
directing the flow of loosely packed material in a free fall along a predetermined path enabling the magnetic articles and non-magnetic articles to separate from each other;
establishing a preshaped magnetic field within the free fall predetermined path by a plurality of rotatable aligned spaced metal plates having a plurality of rotatable magnetic members each of which are located between and magnetically coupled to a pair of adjacent metal plates such that tableware and other magnetic articles are attracted and removed by the preshaped magnetic field from the free falling flow of material and directed into holding engagement with the periphery of the metal plates and wherein a portion of the free falling flow of loosely packed material engage the periphery of the metal plates and the inertia from the free falling material causes the metal plates and the magnetically coupled magnetic members to rotate as an integral assembly;
collecting the non-magnetic articles from the flow of material which are directed along the predetermined path and past the preshaped magnetic field; and
removing from the periphery of the metal plates the tableware and other magnetic articles held thereby.

4,279,745

MAGNET ATTACHMENT FOR VACUUM CLEANERS

Gerald A. Haase, 1005 Country Club Rd., Lake Oswego, Oreg. 97034

Filed Jul. 25, 1980, Ser. No. 172,126
Int. Cl.³ B03C *1/30*
U.S. Cl. 209—215 **4 Claims**

1. A vacuum cleaner magnet attachment, including: (a) a longitudinally flexible, elongated housing, (b) said housing incorporating a plurality of magnetreceiving pockets spaced apart along the length of the housing, and (c) a permanent magnet contained removably in each pocket, and (d) securing means for attaching the housing to the lower front wall of a vacuum cleaner so that the pockets extend outward from the vacuum cleaner.

4,279,746

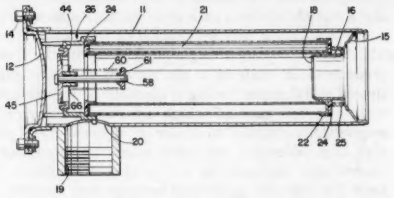
HYDRAULIC FLUID FILTER AND BYPASS VALVE

Donald C. Leutz, Sylvania, Ohio, assignor to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Jan. 21, 1980, Ser. No. 114,029
Int. Cl.³ B01D *27/10*
U.S. Cl. 210—130 **10 Claims**

1. In combination in a tubular filter housing having a removable end wall at one end through which a tubular filter element may be moved for replacement purposes and means at the other end of said housing adapted for receipt and axially biased support of the remote end of said filter element concentrically within said filter housing, a filter element mounting device for support of the proximate end of said filter element, comprising an integral cup-shaped holder having a cylindrical wall and a transverse end wall, an enlarged diameter seat formed in said cylindrical wall for removably receiving and supporting said

filter element at the periphery thereof, first spacer means on said holder extending radially outwardly from said cylindrical wall and sized for a sliding fit in engagement with said filter housing, said first spacer means being sized to form a substantially unobstructed annular passage about said holder and to position said holder substantially radially equidistantly within said filter housing, second spacer means on said holder extending axially outwardly therefrom into engagement with said



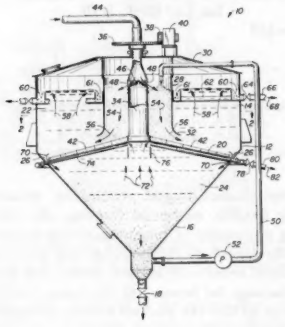
removable end wall of said filter housing, said second spacer means being sized to position said holder at a predetermined axial location within said housing, said first and second spacer means cooperating with said filter housing and said removable end wall, respectively, to retain said filter element concentrically within said filter housing and an aperture in said transverse end wall for receipt of a valve element within said holder.

4,279,747

RAPID CONTINUOUS CLARIFIER

Henry Chen, Pingtung, Taiwan, assignor to Fabcon Incorporated, San Francisco, Calif.

Filed Jan. 17, 1980, Ser. No. 112,778
Int. Cl.³ B01D *21/14*
U.S. Cl. 210—197 **4 Claims**



1. Apparatus for clarifying the liquid portion of a slurry such as preflocculated sugar juice, said apparatus comprising:

a tank including an upwardly opening conical lower section and a cylindrical upper section;

a downwardly opening conical tray located within the tank and dividing the tank into upper and lower portions at approximately the juncture of the conical section and the cylindrical section, the outer periphery of the tray being spaced from the interior of the tank to provide an annular passageway therebetween;

a vertical pipe centrally located within the upper portion of the tank and having an open bottom above the tray;

a rotated pipe located within the vertical pipe, said rotated pipe including a deflector cone within the pipe and a plurality of apertures in the side wall of the rotated pipe immediately above the deflector cone;

a plurality of mud scrapers attached to the rotated pipe and disposed immediately above the conical tray;

means for supplying a slurry to the upper end of the rotated pipe so that the slurry flows out of the rotated pipe through the apertures and into the vertical pipe;

means for supplying mud inside the vertical pipe so that the mud and slurry are mixed within the vertical pipe and flow out through the open bottom of the vertical pipe to the upper portion of the tank circumscribing the vertical pipe, at least some of the liquid portion of the slurry rising through the mud and collecting in the upper portion of the tank around the vertical pipe above the level of the mud, some of the slurry flowing downwardly through the passageway between the tray and the tank into the lower portion of the tank where substantially the remaining liquid portion rises through the mud and collects immediately beneath the center of the tray;

means for withdrawing the collected liquid from the upper and lower portions of the tank; and

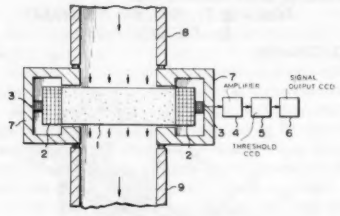
a mud outlet at the bottom of the tank.

4,279,748

HIGH-FIELD GRADIENT MAGNETIC SEPARATOR

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohamashi, Japan

Filed Mar. 1, 1979, Ser. No. 16,422
Claims priority, application Japan, Mar. 8, 1978, 53-26940; Apr. 4, 1978, 53-39965
Int. Cl.³ B01D *35/06*
U.S. Cl. 210—222 **10 Claims**



1. In a magnetic separator including a filter mass for traversal by a stream of fluid containing magnetically susceptible components to be separated for exerting a magnetic field of high field gradient thereon to collect said components therein, the improvement wherein said mass is constituted by a porous body comprising a continuous substrate composed of a nonmagnetic substance, said body having interconnected pores therein open to outer surfaces of the body, at least a portion of the walls of said pores defining said substrate and being coated with a substantially continuous layer of a magnetic substance.

4,279,749

COLLAR FOR CAKE DISCHARGE CHUTE OF ROTATABLE DISC FILTER

Richard D. Moore, New Boston, N.H., assignor to Plastic Techniques, Inc., New Boston, N.H.

Filed Dec. 6, 1979, Ser. No. 100,737
Int. Cl.³ B01D *33/36*
U.S. Cl. 210—330 **9 Claims**

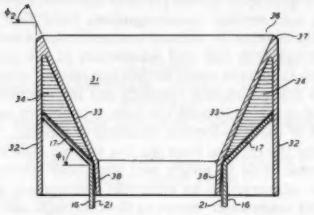
8. A collar for the cake discharge chute of a rotatable disc filter including at least a pair of vertical rotatable filter discs, said chute disposed between said pair of filter discs and having a plurality of walls, the open upper ends of which define a cake inlet and the open lower ends of which define a cake outlet, said walls having internal surfaces interconnecting said cake inlet and outlet and defining a passage through said cake discharge chute through which said cake passes, said walls proximate said filter discs having upwardly and outwardly extending portions which make a first angle ϕ with respect to a horizontal reference plane, said cake having a tendency to

adhere to said internal surfaces of said walls of said cake discharge chute, said collar comprising:

a unitary member for pressing engagement about and with the open upper ends of the walls of said discharge chute, said member having:

a plurality of outer walls parallel to the corresponding walls of said discharge chute;

a plurality of inwardly and downwardly sloping inner walls each joined at its upper end to the upper end of a corresponding outer wall, said inner and outer walls defining a cake-receiving aperture substantially corresponding to



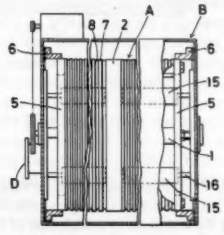
and aligning with the cake inlet defined by the open upper ends of the walls of said chute, said inner walls making a second angle ϕ_2 with respect to said said horizontal reference plane, said second angle ϕ_2 being greater than first angle ϕ to provide the inner walls with a steeper angle with respect to said horizontal reference plane than said upwardly and outwardly extending portions of said chute walls proximate said filter discs to enhance the passage of said cake through said cake discharge chute and to reduce said tendency of said cake to adhere to said internal surfaces of said walls of said cake discharge chute.

4,279,750

CONTINUOUS TREATMENT APPARATUS FOR TREATING WASTE MATERIAL

Mitutaka Hori, 3128-5 Ko-izumicho, Yamatokohriyama-shi, Nara-ken, Japan

Filed Feb. 25, 1980, Ser. No. 124,591
Claims priority, application Japan, Feb. 28, 1979, 54-23665
Int. Cl.³ B01D *33/00*
U.S. Cl. 210—357 **1 Claim**



1. A tank apparatus for continuously treating sewage or waste liquid by means of a drum within the tank, comprising in combination:

(a) a central drive shaft (1) disposed between annular terminal plates (5) defining a filtering zone therebetween in said tank;

(b) a base plate (2) intermediate said terminal plates (5), arms (3) on said base plate (2) said arms having a forward end and a supporting member (4) on each side of said forward end, said supporting member (4) being in parallel with said drive shaft;

(c) stationary rings (7) and movable rings (8) both defining the outer peripheral wall of said drum, both supported by said supporting member (4) both said rings having an inner edge, a projection (11) with an aperture on the inner edge of each stationary ring (7), a spacer means (12) interposed between said projections (11), a first shaft member (10) transversely mounted between the base plate (2) and each terminal plate extending through said aperture, said movable rings (8) being interposed between said stationary rings (7) with a minute clearance therebetween; and,

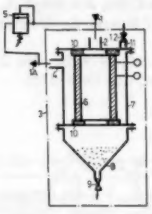
(d) a plurality of cams (13) on the inner edge of said movable rings (8), with a second shaft member (14) connecting said cams (13), also rotor means (15) extending across said drum cooperating with said cams (13) to produce a cam motion, since as the drum is rotated, one of the cams (13) runs into the rotor (15) causing the corresponding movable ring (8) to slide so as to eject sludge.

4,279,751

HYDRAULIC SYSTEM

Semyon I. Fishgal, 610-60 Mountview Ave., Toronto, M6P 2L4, Canada

Filed Mar. 16, 1979, Ser. No. 21,025
Int. Cl.³ B01D *33/00, 35/20*
U.S. Cl. 210—388 **1 Claim**



1. A flow-line filtration system for a liquid containing suspended solids comprising a housing having a liquid inlet port and a liquid outlet port, a porous piezoelectric ceramic filtering element having working surfaces thereon and located in the housing in the flow path of the liquid, partitioning the housing into an input part and an output part, a metallic coating on said working surfaces, and a generator of electric oscillations connected to said metallic coating whereby foreign matter in the liquid is removed by the filter and vibration of the filter effected by the generator of electric oscillation prevents clogging of the filter.

4,279,752

POLYVINYL ALCOHOL SEMI-PERMEABLE MEMBRANE AND METHOD FOR PRODUCING SAME

Akinori Sueoka; Takehiko Okamoto; Akio Ohmori; Syuji Kawai, and Minoru Ueda, all of Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed May 21, 1979, Ser. No. 41,077
Claims priority, application Japan, May 25, 1978, 53-63156
Int. Cl.³ B01D *31/00, 13/00*
U.S. Cl. 210—500.2 **22 Claims**

1. A polyvinyl alcohol (PVA) microporous membrane having a porosity of at least 60% and prepared by a process which comprises preparing a PVA composition containing therein fine silica particles with an average particle size of from 50 Angstrom units to 10 microns in an amount of from 50 to 500 parts by weight per 100 parts of PVA, optionally adjusting the particle size of said silica by aggregating at least a portion of the silica in the composition, coagulating said composition in a coagulation bath to form a PVA membrane, and substantially extracting said silica particles from said membrane, thereby forming a PVA membrane with a microporous layer of controlled uniform pore size, which comprises a plurality of mi-

cropores with an average diameter (r) of 0.01 to 50 microns and exists in (1) either the whole thickness of the membrane or (2) in from 80 to 20% of the whole thickness of the membrane

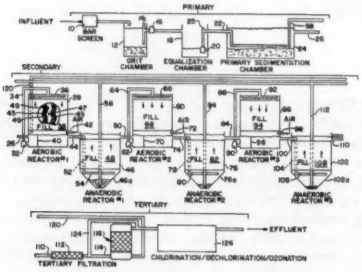
with a supporting layer which comprises a plurality of vacuoles with an average longitudinal length (l) of more than 10 microns being the remainder of the whole thickness of the membrane, wherein the ratio of l/r is at least 5.

4,279,753

WASTEWATER TREATMENT SYSTEM INCLUDING MULTIPLE STAGES OF ALTERNATE AEROBIC-ANEROBIC BIOREACTORS IN SERIES

Niel E. Nielson, Mountain View; Ronald L. Kreiling, Danville; Robert C. Hill, Santa Clara, and Ralph A. Nice, Burlingame, all of Calif., assignors to Arco Environmental Company, Los Angeles, Calif.

Filed Mar. 19, 1979, Ser. No. 21,556
Int. Cl.[3] C02F *3/30*
U.S. Cl. 210—605 **9 Claims**



1. In a method for the treatment of industrial or municipal wastewater of a type including organic carbon and nitrogen-containing nutrients, the steps of

(a) forming a plurality of aerobic zones, each zone including multiple channels defined by spaced-apart exposed support surfaces upon which aerobic microorganisms grow in fixed films,

(b) forming a plurality of anaerobic zones, each zone including multiple channels defined by spaced-apart exposed support surfaces upon which anaerobic microorganisms grow in fixed films, said aerobic zones and anaerobic zones being arranged in a series of alternate aerobic and anaerobic zone pairs including at least a first aerobic-anaerobic zone pair and a last aerobic-anaerobic zone pair,

(c) passing said wastewater into the upper portion of said first aerobic zone and causing it to flow downwardly through said channels under the influence of gravity in at least partially film form exposed to air along said aerobic microorganisms fixed films on their support surfaces for intimate contact between said aerobic microorganisms and said wastewater in the presence of oxygen to thereby cause incremental consumption of the organic carbon nutrients and incremental conversion of organic nitrogen nutrients to ammonia and nitrification of the thus-formed ammonia to nitrate,

(d) passing the treated wastewater as a stream from said first aerobic zone to said first anaerobic zone in which said anaerobic microorganism film is submerged in an anaerobic environment and causing said wastewater stream to flow through said channels past said anaerobic microorganism fixed films for intimate contact to cause further incremental consumption of said organic carbon nutrients and incremental denitrification of nitrate to nitrogen gas,

(e) passing the effluent from the first anaerobic zone to the upper portion of the last aerobic zone and causing it to flow downwardly through said channels under the influence of gravity in at least partially film form exposed to air along said aerobic microorganisms fixed film on their support surfaces for intimate contact between said aerobic microorganisms and said wastewater in the presence of oxygen to thereby cause further incremental consumption of the organic carbon nutrients and incremental conversion of organic nitrogen nutrients to ammonia and nitrification of the thus-formed ammonia to nitrate,

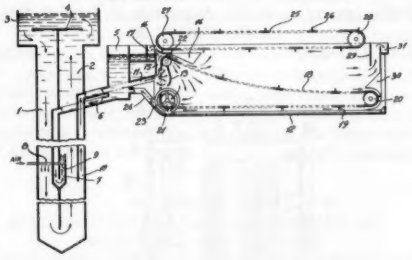
(f) passing the effluent from the last aerobic zone to the last anaerobic zone in which said anaerobic microorganism film is submerged in an anaerobic environment and causing said wastewater stream to flow through said channels past said anaerobic microorganism fixed films for intimate contact to cause further incremental carbon consumption of the organic carbon nutrients and incremental denitrification of nitrate to nitrogen gas, sufficient organic carbon being present in the effluent directed to the last anaerobic zone to cause significant denitrification to occur therein.

4,279,754

MEANS FOR SEPARATION OF GAS AND SOLIDS FROM WASTE MIXED LIQUOR

David C. I. Pollock, Richmond Hill, Canada, assignor to C-I-L Inc., Montreal, Canada

Filed Jun. 13, 1980, Ser. No. 159,347
Claims priority, application Canada, Oct. 26, 1979, 338539
Int. Cl.[3] C02F *3/22*
U.S. Cl. 210—608 **2 Claims**



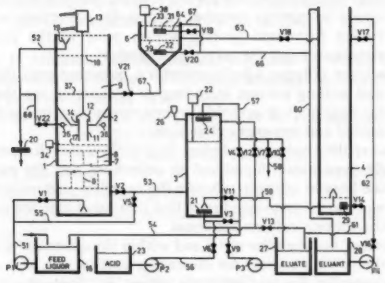
2. In a long vertical shaft activated sludge bioreactor treatment method wherein an aerobic biological reaction is caused to take place during the continuous circulation of fluid waste in an apparatus comprising a long vertical downcomer chamber, and adjacent long vertical riser chamber and a surface basin, the said downcomer and riser chambers operatively communicating directly with each other at their lower ends and through the said surface basin at their upper ends to form a circulatory loop, the said downcomer chamber and riser chamber having means for the injection therein at depth of an oxygen-containing gas, a waste influent conduit operatively opening into said riser chamber at a location above the location of the means for injecting oxygen-containing gas into said riser chamber, a waste effluent conduit operatively discharging from said riser chamber at a location below the location of means for injecting oxygen-containing gas into said riser chamber, and adjacent to

said surface basin a flotation/sedimentation vessel, an improvement is provided whereby fluctuations in flow of waste through the bioreactor and associated flotation/sedimentation vessel are substantially eliminated, the said improvement comprising receiving both influent and recirculated waste sludge in a holding reservoir adjacent to said flotation/sedimentation vessel, said holding reservoir having a base outlet therein adapted to discharge said waste sludge into said riser chamber, removing flotating sludge and liquid effluent from said sludge flotation/separation vessel and discharging said effluent and sludge into said holding reservoir, the rate of discharge of said effluent and sludge into said holding reservoir being dependent on the back pressure exerted by the head of liquid in said holding reservoir.

4,279,755
CONTINUOUS COUNTERCURRENT ION EXCHANGE PROCESS

Alexander Himsley, 250 Merton St., Toronto, Ontario, Canada (M4S 1B1)

Filed Feb. 26, 1980, Ser. No. 124,861
Int. Cl.³ B01D *15/04*
U.S. Cl. 210—661 **10 Claims**

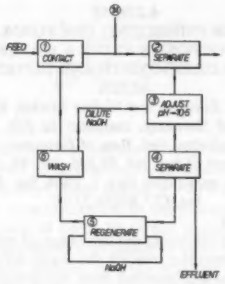


1. A process for absorbing ions of interest onto ion exchange resin particles from a feed liquor containing ions which when absorbed on said resin particles cause the density of the particles to increase, comprising the steps of continously flowing the feed liquor upwardly through a main bed of ion exchange resin particles contained in a main chamber of an absorption column and thereby maintaining the bed in a fluidized state, the resin being one on which the ions of interest are preferentially absorbed onto the resin particles causing the density of the loaded resin particles to increase and migrate toward the lower region of said column, continuously collecting loaded particles from the lower region of the column, normally passing an outflow of the feed liquor from the upper region of the main chamber upwardly into the lower region of a polishing chamber containing a secondary polishing bed consisting of a batch of predetermined size of fluidized ion exchange resin particles whereby residual ions of interest in said outflow from the main bed are substantially completely absorbed onto the resin particles in the polishing bed, thereby producing a barren liquor flowing out of the upper region of the polishing chamber, the batch of resin particles contained in the main chamber corresponding in volume to between about four to about twenty of the batches of particles contained in the polishing chamber, periodically diverting the outflow of the feed liquor from the upper region of the main chamber to an auxiliary outlet, transferring the batch of resin particles from the polishing chamber to the main chamber while maintaining the flow of feed liquor upwardly through the main chamber to maintain the particles fluidized therein, replenishing the polishing chamber by introducing into it a fresh batch of particles, and thereafter recommencing the outflow of the feed liquor from the upper region of the main bed upwardly into the lower region of the polishing chamber.

4,279,756
WATER CLARIFICATION

Donald E. Weiss, Blackburn; Luis O. Kolarik, Forest Hill; Anthony J. Priestley, Elsternwick, and Nevil J. Anderson, Sandringham, all of Australia, assignors to Commonwealth Scientific and Industrial Research Organization, Campbell, Australia

Continuation-in-part of Ser. No. 792,767, May 2, 1977, abandoned. This application Sep. 19, 1978, Ser. No. 944,125
Claims priority, application Australia, May 3, 1976, PC5798; Mar. 25, 1977, PC9576; Sep. 22, 1977, PD1779
Int. Cl.³ B01D *15/08*
U.S. Cl. 210—667 **29 Claims**



1. A process for the clarification of water which comprises the steps of:

(a) contacting water at pH 3–5 with a coagulant/adsorbent consisting of a finely divided particulate mineral or clay material, the individual particles of which have a particle size of 10 microns or less and have a thin hydroxylated surface layer which has a positive zeta potential at the adsorption pH;

(b) separating the water from the coagulant/adsorbent to obtain the clarified water;

(c) treating a suspension of the spent coagulant/adsorbent to raise the pH to about 10.5;

(d) separating the coagulant/adsorbent from the resulting effluent solution;

(e) where necessary regenerating the coagulant/adsorbent by treatment with an alkaline solution;

(f) separating the coagulant/adsorbent from the alkaline solution;

(g) washing the regenerated coagulant/adsorbent with water;

(h) separating the coagulant/adsorbent from the water; and

(i) recycling the regenerated and washed coagulant/adsorbent to step (a).

4,279,757
PROCESS FOR SEPARATING HYDROPHOBIC ORGANIC LIQUIDS FROM WATER

Gerard DeBeuckelaer, Weisenheim; Wolfgang Jarre, Ludwigshafen; Rolf Wurmb, Heidelberg, and Matthias Marx, Bad Durkheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 31, 1979, Ser. No. 108,424
Claims priority, application Fed. Rep. of Germany, Jan. 15, 1979, 2901335
Int. Cl.³ C02F *1/28*
U.S. Cl. 210—671 **5 Claims**

1. A process for separating hydrophobic organic liquids from water comprising loosely filling a vessel with polyurethane foam so that the foam will represent from 50–95 percent

of the total volume when the vessel is filled, and passing a mixture of water and organic hydrophobic liquids through the vessel, said foam being a hydrophobic, polyurethane foam which

(a) contains in bonded form, a compound (1) whose percent by weight, relative to the total weight of the polyisocyanate and polyol being reacted, is from 2 to 50 percent; (2) which has a hydrophobic effect; (3) which contains at least one group having a Zerewitinoff active hydrogen atom; and (4) which has a solubility parameter of 7.5 to 10.5 $(cal/cm^3)^{\frac{1}{2}}$;

(b) is reversibly deformable; and

(c) is compressed less than 25 percent by its own weight and the weight of the mixture containing water and hydrophobic organic liquids when the foam is loaded with said mixture.

4,279,758

PROCESS FOR INHIBITING THE FORMATION OF MINERAL DEPOSITS FROM A WATER USING N-N-DIALKYLUREIDOMETHANE DIPHOSPHONIC ACIDS

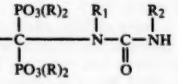
Friedrich Krüger, Edingen, and Walter Michel, Ilvesheim, both of Fed. Rep. of Germany, assignors to Joh. A. Benckiser GmbH, Ludwigshafen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 58,806, Jul. 19, 1979, Pat. No. 4,255,572. This application Oct. 1, 1980, Ser. No. 192,648

Int. Cl.³ B01D *21/01*

U.S. Cl. 210—700 **9 Claims**

1. A process for inhibiting the formation of mineral deposits from a water comprising treating the water with an effective amount of a compound selected from the group consisting of N,N'-dialkylureidomethane diphosphonic acids and their alkaline salts having the formula:



wherein R_1 and R_2 represent an alkyl group having one to three carbon atoms or a ring-forming alkylene group having two or three carbon atoms and R is hydrogen or an alkali metal.

4,279,759

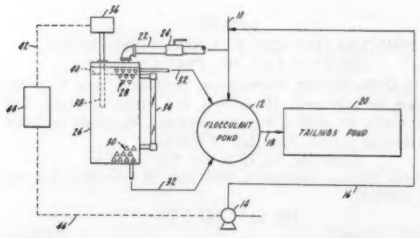
SETTLING COLUMN FOR USE WITH SOLIDS MONITOR

Dennis G. Pardikes, Sauk Village, Ill., assignor to Nalco Chemical Company, Oak Brook, Ill.

Continuation of Ser. No. 15,582, Feb. 27, 1979, abandoned. This application Apr. 14, 1980, Ser. No. 139,863

Int. Cl.³ C02F *1/52*

U.S. Cl. 210—709 **5 Claims**



1. A method of controlling the addition rate of a water treatment chemical which induces settling to a normally-flowing process stream containing suspended solids requiring such treatment which comprises the steps of:

(a) diverting a portion of the flowing process stream prior to the process stream entering a receiving chamber to provide a side stream sample, said sample containing both solids to be settled and the treatment chemical;

(b) transporting the side stream sample to the top of a settling column while providing a quiescent area therein, said column being equipped with an overflow weir and underflow weir dimensioned to match the side stream flow entering the settling column from the process stream and also having a suspended matter monitor located below the normal liquid level and within said quiescent area in said settling column;

(c) obtaining a readout signal from the suspended matter monitor, which signal indicates a measure of the suspended matter contained within said settling column;

(d) transmitting said signal to said chemical feed system which feeds a water treatment chemical in response to said readout signal.

4. A system for controlling the addition rate of water treatment chemicals which induce settling to a normally-flowing process stream containing suspended solids requiring such treatment, comprising:

means for metering a supply of treatment chemical into said process stream, means for introducing said process stream into a receiving chamber, means for diverting a side stream from said process stream prior to the process stream entering the receiving chamber

a settling column which provides a quiescent area therein said settling column including an inlet at the top thereof for introducing said side stream containing solids to be settled and treatment chemicals,

said settling column including an overflow weir for passing the supernatant liquid and an underflow weir for passing the heavier effluent, wherein the overflow and underflow weirs are dimensioned such that flow rates into and out of the settling column are equal,

a sensor between the weirs and within the quiescent area of the settling column for measuring settling rate, and

a controller for said metering means, the controller being responsive to said sensor for increasing or decreasing the treatment chemical feed rate.

4,279,760

PROCESS AND APPARATUS FOR CONTINUOUS CAKE FILTERATION UNDER PRESSURE

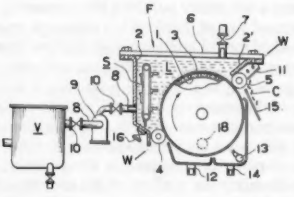
Samuroh Yamamoto, 6-2-13-506, Akasaka, Minato-ku, Tokyo, Japan

Continuation of Ser. No. 970,907, Dec. 19, 1978, abandoned. This application May 30, 1980, Ser. No. 155,035

Claims priority, application Japan, Dec. 27, 1977, 52/156712

Int. Cl.³ B01D *33/14*

U.S. Cl. 210—784 **25 Claims**



1. A process for continuous pressure filtration comprising rotating at least one perforated filter cylinder in a vessel so that at least a portion of the filter cylinder defines in part a filtering chamber and another part of the filtering chamber is defined by said vessel, said filter cylinder having a filtering surface covered with a filter medium, sealing said filtering chamber in at

least two locations by at least two sealing and squeezing rolls between said filter cylinder and the walls of said vessel, disposing each of said sealing and squeezing rolls at a position at least partially below the upper level of said filtering chamber, supplying raw slurry under pressure to said filtering chamber, effecting pressure filtration through said filter medium on said filter cylinder, continuously removing filter cake from the filter cylinder by utilizing at least one of said sealing and squeezing rolls, discharge said filter cake externally of said filtering chamber, and removing the filtered liquid from the inside of said filter cylinder.

4,279,761

MIXTURE OF DI- OR TRITHIOPHOSPHORIC ACID DIESTERS, PROCESSES FOR PRODUCING IT AND ITS USE

Klaus P. Michaelis, Lindenfels, and Hermann O. Wirth, Bensheim, both of Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

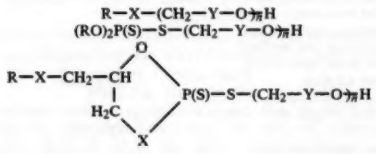
Division of Ser. No. 871,865, Jan. 24, 1978. This application Dec. 20, 1979, Ser. No. 105,797

Int. Cl.³ C10M *1/38*; C07F *9/02*

U.S. Cl. 252—46.4 **10 Claims**

1. The product obtained by the reaction of

(a) a compound of the general formula I, II or III or mixtures thereof



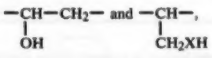
(I)

(II)

(III)

wherein

y represents the groups



n represents a value of 0.5 to 10, both X's independently of one another represents an oxygen atom or sulphur atom, and

R represents linear or branched alkyl of 1 to 30 carbon atoms; said alkyl interrupted by oxygen or sulphur; cycloalkyl of 5 to 12 carbon atoms; cycloalkylalkyl of 5 to 12 carbon atoms in the cycloalkyl ring; phenyl; benzyl; or said cycloalkyl, said cycloalkylalkyl, said phenyl or said benzyl substituted by 1 or 2 alkyl groups having 1 to 12 carbon atoms, with

(b) phosphorus pentasulfide; in a molar ratio of ¼ mol of phosphorus pentasulfide per mole of OH or SH groups of compounds I, II or III, at 0° to 150° C.;

said product having free acidic PSH groups formed by the reaction of phosphorus pentasulfide with compounds I, II or III.

4,279,762

CUTTING OILS CONTAINING 3-ISOTHIAZOLONES AS BIOCIDES

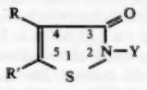
Sheldon N. Lewis, Willow Grove; George A. Miller, Glenside, and Andrew B. Law, Levittown, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 910,730, May 30, 1978, which is a division of Ser. No. 368,168, Jun. 8, 1973, Pat. No. 4,105,431, which is a continuation-in-part of Ser. No. 836,660, Jun. 25, 1969, Pat. No. 3,761,488, which is a continuation-in-part of Ser. No. 672,437, Oct. 3, 1967, Pat. No. 3,523,121, which is a continuation-in-part of Ser. No. 621,780, Mar. 19, 1967, abandoned. This application Dec. 10, 1979, Ser. No. 101,594

Int. Cl.³ C10M *1/38*

U.S. Cl. 252—47.5 **6 Claims**

1. A cutting oil composition comprising a major proportion of a cutting oil and a biocidal amount of a compound of the formula



wherein

Y is an unsubstituted or substituted alkyl, alkenyl, or alkynyl group of 1 to 18 carbon atoms, an unsubstituted or substituted cycloalkyl group having a 3 to 6 carbon atom ring and up to 12 carbon atoms, an unsubstituted or substituted aralkyl group of up to 10 carbon atoms, or an unsubstituted or substituted aryl group of up to 10 carbon atoms,

R is hydrogen, halogen, or a (C_1–C_4) alkyl group, and

R′ is hydrogen, halogen, or a (C_1–C_4) alkyl group, or a salt of a compound of the above formula with a strong acid.

4,279,763

PROCESS OF PREPARING FERRITE POWDERS

Jean-Marie Boeuf, Grenoble; Pierre Gerest, Allevard, and Henri Lemaire, LaTronche, all of France, assignors to Aimants Ugimag S.A., Saint-Pierre-d'Allevard, France

Continuation-in-part of Ser. No. 138,532, Apr. 9, 1980, which is a continuation of Ser. No. 876,355, Feb. 9, 1978, abandoned. This application Jun. 5, 1980, Ser. No. 156,655

The portion of the term of this patent subsequent to Sep. 5, 1997, has been disclaimed.

Int. Cl.³ C04B *35/26*

U.S. Cl. 252—62.58 **7 Claims**

1. In a process for preparing ferrite powders of Ba, Sr or Pb that are to be incorporated in an elastomeric, thermoplastic, or thermosettable binder for the purpose of obtaining flexible or rigid permanent magnets with high magnetic properties, the process comprising the steps of preparing a mixture of particles of iron oxide and at least one carbonate of Ba, Sr or Pb, calcining the mixture to produce Ba, Sr or Pb ferrite powder, the powder being then adapted for incorporation in said binder and for orientation in the binder, the improvement in said process comprising the steps of adding to said mixture at least one alkaline or alkaline-earth halide in a total amount of 0.5% to 15% of the total weight of said mixture, and at least one oxygenated boron compound in a total amount of 0.2 to 7% of the weight of said mixture, thereafter calcining the mixture between 850° and 1100° for at least 15 minutes, crumbling the calcined mixture, and acid washing, water rinsing and drying the mixture, the powder obtained comprising single domain, approximately one micron size particles suitable for direct incorporation and orientation in said binder, the magnets obtained upon incorporation and orientation of said powder in said binder being characterized by higher Br, Hc and BHmax properties than magnets obtained utilizing powder prepared by the above process but having only one of said halide and oxygenated boron compound additives.

4,279,764

ENCAPSULATED BLEACHES AND METHODS OF PREPARING THEM

Gaylen R. Brubaker, Lawrenceville, N.J., assignor to FMC Corporation, Philadelphia, Pa.

Filed Jun. 30, 1980, Ser. No. 164,616
Int. Cl.³ C11D 7/56
U.S. Cl. 252—99 13 Claims

1. A storage stable, halogen bleach system having improved fabric dye compatibility comprising encapsulated particles of a halogen bleaching agent having a least one reactive N-halo atom which releases hypohalite ion under aqueous bleaching conditions, the said particles having thereon a coating of a soluble, hydrated, silicate bound inorganic salt in admixture with an N—H compound, which N—H compound reacts relatively rapidly with the hypohalite ion to produce the corresponding N-halo compound under conditions of elevated hypohalite levels surrounding the encapsulated bleach particles undergoing initial dissolution in aqueous media during preparation of the bleach solution, but which N—H compound reacts relatively slowly with the hypohalite to form said corresponding N-halo compound under the conditions of low hypohalite levels in the final bleach solution after mixing and dissolution of the bleaching agent, the ratio of N-halo compound to N—H compound in said particles being from about 1:1 to about 50:1.

4,279,765

SOAP COMPOSITION CONTAINING AN AMINO-SUBSTITUTED POLYSILOXANE

Michael P. L. Hill, St. Lythans, Nr. Wenvoe, Wales, and Anthony N. Tizard, Weybridge, England, assignors to Dow Corning Limited, Barry, Wales

Filed Sep. 8, 1980, Ser. No. 184,853
Claims priority, application United Kingdom, Sep. 15, 1979, 32069/79
Int. Cl.³ C11D 9/36
U.S. Cl. 252—117 3 Claims

1. A soap composition which contains from 0.01 to 6% by weight, based on the total weight of the composition, of a polydiorganosiloxane having a molecular weight of at least 2000 and having in the molecule at least one silicon-bonded organic substituent which is a monovalent group composed of carbon, hydrogen, nitrogen and, optionally, oxygen, said monovalent group having therein at least one amino group and being linked to the silicon atom through a silicon to carbon bond, at least 50 percent of the total number of substituents in said polydiorganosiloxane being methyl groups, any remaining substituents being selected from monovalent hydrocarbon groups having at least two carbon atoms, alkoxy groups, alkoxyalkoxy groups or hydroxy groups.

4,279,766

DETERGENT COMPOSITIONS COMPRISED OF NON-ABRASIVE SILICEOUS SCOURING AGENTS

Daniel Joubert, Trevoux, and Georges Vrisakis, Collonges-Au-Mont-D'Or, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Dec. 14, 1979, Ser. No. 103,597
Claims priority, application France, Dec. 20, 1978, 78 35742
Int. Cl.³ C11D 3/14, 3/12
U.S. Cl. 252—174.25 6 Claims

1. A detergent composition including, as a scouring agent, insoluble non-abrasive silica particles having a B.E.T. surface area between 80 and 150 m^2/g, a C.T.A.B. surface area below 45 m^2/g, a porosity on the mercury porosimeter below 20 cm^3/g, an average particle diameter of from 15 to 20μ, an oversize between 10 and 20% on the 45μ sieve and an oversize between 20 and 35% on the 25μ sieve.

4,279,767

USE OF IMPROVED HYDROQUINONE OXYGEN SCAVENGER IN AQUEOUS MEDIUMS

John A. Muccitelli, Feasterville, Pa., assignor to Betz Laboratories, Inc., Trevose, Pa.

Filed Jul. 14, 1980, Ser. No. 168,983
Int. Cl.³ C02F 1/20, 1/58; C09K 15/08, 15/20
U.S. Cl. 252—178 14 Claims

1. A method for reducing the amount of oxygen in oxygen-containing feedwater to a boiler which method comprises adding to said feedwater an effective amount for the purpose of a hydrazine-free treatment comprising a stable solution of hydroquinone and mu-amine.

11. A method for reducing the amount of oxygen in an oxygen-containing aqueous medium, which method comprises adding to the aqueous medium an effective amount for the purpose of a hydrazine-free treatment comprising a stable solution of hydroquinone and mu-amine, said treatment being added in an amount of from about 0.01 to about 10,000 parts per million parts of aqueous medium, wherein the ratio of hydroquinone to mu-amine is about 1:1.3 or less, and wherein said aqueous medium is that of a water heating system.

4,279,768

SERVICE DESCALER FOR AQUEOUS SYSTEMS

Bruce D. Busch, Shakopee, Minn., assignor to Fremont Industries, Inc., Shakopee, Minn.

Filed Feb. 4, 1980, Ser. No. 117,952
Int. Cl.³ C02F 5/10
U.S. Cl. 252—180 3 Claims

1. An in-service descaler for heat transfer surfaces consisting essentially of a composition having the following formulation:

Component	Percent by Weight
A chelating agent selected from the group consisting of tetrasodium ethylene diamine tetra acetic acid and tetrasodium nitrotriacetate monohydrate and mixtures thereof based upon a 40% aqueous solution	5.0 to 40.0
Polyacrylamide having a molecular weight of about 8000	0.1 to 5.0
Polyacrylamide having a molecular weight of about 1000	0.1 to 5.0
Benzotriazole	0 to 2.0
Sodium gluconate	1.0 to 10
Sodium sulfite	0.0 to 10
Water	balance

wherein said formulation is present in an aqueous solution in a range from between about 1 part to 1000 to 5000 parts of system water.

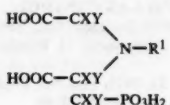
4,279,769

BLEACHING COMPOSITION

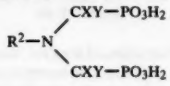
Kouichi Yagi, Tokyo, and Yunosuke Nakagawa, Soka, both of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Mar. 14, 1979, Ser. No. 20,275
Claims priority, application Japan, Mar. 20, 1978, 53-31922; Dec. 22, 1978, 53-159624
Int. Cl.³ C01B 15/10; C11D 3/395, 7/56
U.S. Cl. 252—186 12 Claims

1. A bleaching composition consisting essentially of (A) one or both of sodium percarbonate and a tetrasodium ethane-1,1,2,2-tetracarboxylate/hydrogen peroxide adduct, and (B) at least one compound of the formulae (I), (II) and (III):

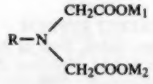


(I)



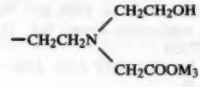
(II)

wherein X and Y each represent hydrogen or an alkyl group of 1–5 carbon atoms, R^1 represents an alkyl group of 1–5 carbon atoms, an acyl group of 1–5 carbon atoms or a phosphonoalkylene group of 1–5 carbon atoms, R^2 represents a carboxyalkylene group of 1–5 carbon atoms, and their alkali metal salts, alkaline earth metal salts, ammonium salts and alkylolamine salts having an alkyl group of 2 or 3 carbon atoms, and



(III)

wherein R represents $HOCH_2CH_2$— or



and M_1, M_2 and M_3 represents an alkali metal or an alkaline earth metal.

4,279,770

LIQUID CRYSTAL 2,3-DICYANO-HYDROQUINONE DERIVATIVES

Takashi Inukai; Hiromichi Inoue; Kenji Furukawa; Hideo Sato, and Shigeru Sugimori, all of Yokohamashi, Japan, assignors to Chisso Corporation, Osaka, Japan

Filed Sep. 12, 1979, Ser. No. 74,655

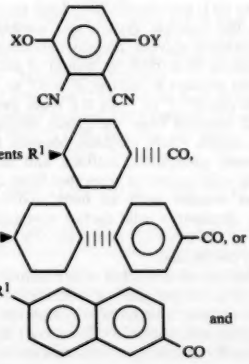
Claims priority, application Japan, Sep. 20, 1978, 53-115591; Nov. 15, 1978, 53-140710; Nov. 25, 1978, 53-145508; Jan. 31, 1979, 54-9917; Mar. 24, 1979, 54-34545; Aug. 27, 1979, 54-108978

Int. Cl.³ C07C *121/75;* C09K *3/34;* G02F *1/13*

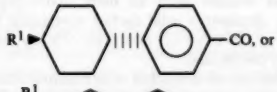
U.S. Cl. 252—299.62 **10 Claims**

1. Compounds expressed by the general formula (I)

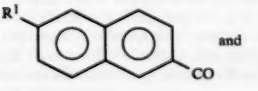
(I)



wherein X represents R^1 ▶ |||| CO,



and



-continued

Y represents R^4, R^3 ▶ |||| CO, or R^4—O—CH_2CH_2,

R^1 and R^3 each represent an alkyl group or an alkyloxy group of 1–10 carbon atoms; and

R^4 represents an alkyl group of 1–10 carbon atoms.

7. Liquid crystal compositions comprising at least one compound of the general formula (I) of claim **1**, and having a negative dielectric anisotropy.

4,279,771

(2'-CYANO-4'-N-ALKYL)PHENYL-3-CHLORO-4-N-ALKOXY BENZOATES AND LIQUID CRYSTAL COMPOSITIONS THEREOF

Yoshio Shionozaki; Sakao Kanbe, and Katsumori Takei, all of Suwa, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

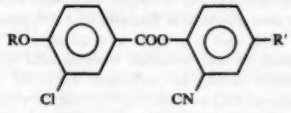
Filed Jan. 23, 1980, Ser. No. 114,775

Claims priority, application Japan, Jan. 26, 1979, 54-8590; Apr. 4, 1979, 54-40659; Oct. 26, 1979, 54-138546

Int. Cl.³ C07C *121/75;* C09K *3/34;* G02F *1/13*

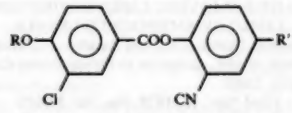
U.S. Cl. 252—299.63 **21 Claims**

1. An ester compound represented by the general formula



wherein R and R' are selected from the group consisting of straight-chain alkyl groups having from one to eight carbon atoms for defining a (2'-cyano-4'-n-alkyl) phenyl-3-chloro-4-n-alkoxy benzoate.

9. A liquid crystal composition comprising liquid crystal material admixed with at least one (2'-cyano-4'-alkyl) phenyl-3-chloro-4-alkyloxybenzoate represented by the general formula:



wherein R and R' are selected from the group consisting of straight-chain alkyl groups having from one to eight carbon atoms.

4,279,772

CRYSTAL FOR SCINTILLATOR

Kazumasa Takagi, Kokubunji; Tokuumi Fukazawa, Tachikawa, and Tetsu Oi, Tokyo, all of Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

Filed Jan. 15, 1980, Ser. No. 112,276

Claims priority, application Japan, Jan. 17, 1979, 54/2968

Int. Cl.³ C09K *11/46*

U.S. Cl. 252—301.4 F **4 Claims**

1. A crystal for a scintillator which comprises a single crystal of $Bi_4Ge_3O_{12}$ containing at least one component selected from the group consisting of $Bi_4Si_3O_{12}$ in an amount of not greater than 0.5% by weight and Gd in an amount of not greater than 50 ppm said amount being sufficient to effect, upon excitation by gamma ray radiation, a greater light output than that effected by a single crystal of $Bi_4Ge_3O_{12}$ free of said component

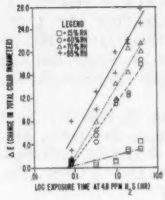
grown under the same conditions as the single crystal of $Bi_4Ge_3O_{12}$ containing said component.

4,279,773

COMPOSITION USEFUL FOR DETECTING H_2S

John P. Franey, Bridgewater, and Thomas E. Graedel, Mendham, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 15, 1979, Ser. No. 66,573
Int. Cl.[3] G01N *31/22*
U.S. Cl. 252—408 5 Claims



1. A detection apparatus suitable for quantitatively detecting H_2S comprising a polymer having incorporated a lead containing additive characterized in that said lead containing additive reacts with H_2S, and is present in a quantity of at least 10 weight percent of said polymer wherein said quantity is a quantity which would be sufficient to avoid more than 1×10^{-5} moles of HCl evolution in five hours for each gram of a PVC sample utilizing said additive in said quantity, and wherein the permeation constant at 25 degrees C. of said polymer is at least

5×10^{-9} cm^3 H_2S·cm thickness/(cm^2 area·sec·cm Hg).

4,279,774

METHOD OF REMOVING LIPID INHIBITORS FROM LIMULUS AMEBOCYTE LYSATE

Gene K. Lindsay, Middletown, and Andrew J. O'Beirne, Walkersville, both of Md., assignors to Dynasciences Corporation, Los Angeles, Calif.

Filed Nov. 13, 1979, Ser. No. 93,403
Int. Cl.[3] G01N *31/00, 21/04, 33/48*
U.S. Cl. 252—408 15 Claims

1. An improved method of removing lipid inhibitors from Limulus amebocyte lysate to increase the sensitivity and quality of the lysate, said method comprising:

(a) intimately contacting Limulus amebocyte lysate with a selected binary liquid solvent system containing first and second selected organic solvents of differing polarities, said first solvent being of low polarity registering not in excess of about 0.5 on the elutotrophic series scale, said second solvent being of high polarity registering at least about 0.8 on said elutotrophic series scale, said second solvent being present in said solvent system in a concentration of about 2–25% by volume of said system, said solvents being present in an amount and contacting said lysate for a time sufficient to draw water into said solvent system from said lysate and extract and denature lipid inhibitors in said lysate; and,

(b) separating said Limulus amebocyte lysate and said solvent system from each other and recovering said lysate in purified form having improved sensitivity.

4,279,775

BLOOD GAS CONTROL

Allan L. Louderback, 9661 Longden Ave., Temple City, Calif. 91780, and Paul R. Szatkowski, 24 Winthrop Rd., Bethel, Conn. 06801

Filed Dec. 31, 1979, Ser. No. 108,480
Int. Cl.[3] G01N *33/48*
U.S. Cl. 252—408 11 Claims

1. A completely synthetic liquid control standard for use in the quality assurance of blood gas instrumentation systems comprising an aqueous solution of a dye buffered to a pH of from about 7.1 to about 7.7 and containing sufficient bicarbonate ion to provide a pCO_2 of from about 20 to about 80, ethylene glycol to provide a viscosity of from about 3 to about 9 centipoises and promote clearing of proteinaceous material from said instrumentation systems and gaseous oxygen to provide a pO_2 of from about 50 to about 400 retained in a sealed receptacle.

4,279,776

CATALYST SYSTEM

Akinobu Shiga; Yoshiharu Fukui, both of Niihama; Katsumi Hanji, Ibaraki; Toshio Sasaki, Niihama; Masahisa Okawa, Niihama; Hideaki Matsuura, Niihama, and Yasuharu Yamada, Takatsuki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Division of Ser. No. 11,676, Feb. 12, 1979, Pat. No. 4,235,984.
This application Apr. 14, 1980, Ser. No. 139,989
Claims priority, application Japan, Feb. 23, 1978, 53-20490; Mar. 9, 1978, 53-27331
Int. Cl.[3] C08F *4/02, 4/64*
U.S. Cl. 252—429 B 9 Claims

1. A catalyst system comprising three components A, B and C:

A: a solid catalyst produced as follows:

(1) an organo-magnesium compound represented by the general formula RMgX, wherein R is C_1–C_8 alkyl, aryl or alkenyl group and X is a halogen atom, synthesized in the presence of an ether (I) solvent is reacted in solution in said solvent with at least one halogen-containing compound of (a) and (b),

(a) halogeno-silicon compounds of the formula

$$R_n^1SiX_{4-n}$$

wherein R^1 is a C_1–C_8 alkyl, aryl or alkenyl group, X is a halogen atom and n is a number satisfying $0 \leqq n < 4$,

(b) halogeno-aluminum compounds of the formula

$$R_l^2AlX_{3-l}$$

wherein R^2 is a C_1–C_8 alkyl, aryl or alkenyl group, X is a halogen atom and l is a number satisfying $0 \leqq l < 3$, at 0° to 100° C. in the former to the latter molar ratio of 1:10 to 10:1, and the resulting solid product is separated from the reaction system and washed with an inert hydrocarbon solvent, thereby obtaining a solid product containing 20 to 60% by weight of said ether (I),

(2) the solid product is reacted, at −50° to 150° C., with an electron donor of 10^{-5} to 0.1 mole per gram of solid product, selected from the group consisting of amines, amides, ethers, esters, alcohols, phenols, ketones, nitriles, phosphines, phosphites, sulfides, and lactones, and the resulting solid carrier is separated from the reaction system and washed with an inert hydrocarbon solvent, thereby obtaining a solid carrier containing 1 to 30% by weight of the ether (I) and 1 to 20% by weight of the electron donor, and

(3) the solid carrier is reacted with titanium tetrachloride of 0.01 to 10 moles per gram of solid carrier at 0° to 150° C., and the resulting solid catalyst is separated from the reaction system and washed with an inert hydrocarbon solvent, thereby obtaining a solid catalyst containing 0.1 to

15% by weight of the ether (I) and 0.1 to 10% by weight of the electron donor and 0.1 to 20% by weight of titanium,

B: an activating agent of the formula,

$$R_m^3AlY_{3-m}$$

wherein R^3 is a C_1-C_8 alkyl, aryl or alkenyl group, Y is a halogen or hydrogen atom and m is a number satisfying $2 \leqq m \leqq 3$ and

C: an electron donor selected from the group consisting of amines, amides, ethers, esters, alcohols, phenols, ketones, nitriles, phosphines, phosphites, sulfides, and lactones, the molar ratio of titanium to activating agent being 10:1 to 1:500 and the molar ratio of titanium to electron donor (c) being 10:1 to 1:500.

4,279,777

MOLYBDENUM-COPPER-TIN CATALYSTS

Louis J. Velenyi, Lyndhurst, and Andrew S. Krupa, Twinsburg, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Dec. 10, 1979, Ser. No. 102,087
Int. Cl.³ B01J *27/02, 27/14, 23/10, 23/14*
U.S. Cl. 252—439 **9 Claims**

1. A catalyst composition comprising a catalyst having the following formula:

$$Mo_aCu_bSn_cA_dL_eO_x$$

wherein

A is selected form the group consisting of Li, Na, K, Cs, Mg, Ca, Sr, Ba, La, Ce, Th, U and mixtures thereof;

L is selected from the group consisting of Zn, Cd, Hg, Al, Ga, In, Tl, Ti, Zr, Hf, Nb, Ta, Ag, Au, Te, Se, Bi, Sb, Cr, As, S, Re, Mn, Ni, Co, Ru, Rh, Pd, Os, Ir, Pt and mixtures thereof; and

wherein

a is 0.1–15;

b is 0.1–15;

c is 0.05–12;

d is 0.01–10;

e is 0–12; and

x is the number of oxygens sufficient to satisfy the valence requirements of the other elements present.

4,279,778

PROCESS FOR THE PREPARATION OF A SULPHIDED FLUORINE-CONTAINING NICKEL-TUNGSTEN CATALYST FOR THE CONVERSION OF HYDROCARBONS

Gerard T. Pott, and Johannes C. M. Stuiver, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed May 7, 1980, Ser. No. 147,693
Claims priority, application Netherlands, Jun. 5, 1979, 7904382
Int. Cl.³ B01J *21/04, 23/30, 27/04, 27/12*
U.S. Cl. 252—439 **7 Claims**

1. A process for the preparation of a sulphided, fluorine-containing nickel-tungsten catalyst, which comprises evaporating to dryness a solution containing an aluminum compound and a tungsten compound wherein the atomic ratio Al/W lies in the range of 0.30–1, calcining the resultant product at a temperature from about 500° C. to 700° C., impregnating the calcined product with a solution of a nickel compound, then sulphiding and fluorinating the impregnated product.

4,279,779

SPHEROIDAL ALUMINA PARTICLES AND CATALYSTS EMPLOYING THE PARTICLES AS A SUPPORT

Moises G. Sanchez, Severna Park; Michael V. Ernest, Baltimore, and Norman R. Laine, Rockville, all of Md., assignors to W. R. Grace & Co., New York, N.Y.

Continuation of Ser. No. 781,379, Mar. 25, 1977, Pat. No. 4,179,408. This application Aug. 8, 1979, Ser. No. 64,700
Int. Cl.³ B01J *21/04, 23/42, 23/44, 23/46*
U.S. Cl. 252—448 **23 Claims**

1. A catalyst support comprising spheroidal alumina particles having a total pore volume of about 0.8 to about 1.7 cubic centimeters per gram, a pore volume of about 0.5 to about 1.0 cubic centimeters per gram in pores of 100 to 1000 A. in diameter, a pore volume of about 0.1 to about 0.4 cubic centimeters per gram in pores of 1000 to 10,000 A. in diameter, a surface area of about 80 to about 135 square meters per gram, an attrition loss of less than about 5%, a crush strength of at least about 5 pounds, a volume shrinkage of less than about 6% upon exposure to a temperature of 1800° F. for 24 hours, and a compacted bulk density of about 20 to about 36 pounds per cubic foot.

4,279,780

METHOD OF PREPARING CATALYST SUPPORTS

Robert A. Dombro, Clinton, Iowa, assignor to Chemplex Company, Rolling Meadows, Ill.

Filed Apr. 18, 1980, Ser. No. 141,570
Int. Cl.³ B01J *29/00, 37/02*
U.S. Cl. 252—452 **10 Claims**

1. The method of preparing large pore volume zirconia-silica useful as a catalyst support for a catalyst for polymerizing and copolymerizing olefins, comprising:

a. reacting a zirconium compound of the formula $M_4Zr(C_2O_4)_4.nH_2O$, where M is an alkali metal or ammonium ion and n equals 0 to 10, with a silicon compound of the type A_2SiO_3, where A is an alkali metal, in an aqueous solution at a pH of at least 11 and then adding an acidic material to a pH of about 5–9, to produce a hydrocogel;

b. aging said hydrocogel at a temperature between about ambient to 90° C. for at least one hour;

c. washing said hydrocogel of b first with water, then with aqueous ammonium nitrate and again with water;

d. partially dehydrating the resulting washed hydrocogel of c by azeotropic distillation by mixing with a compound capable of forming an azeotrope with water or by washing the hydrocogel with a water miscible solvent to produce a substantially water-free, large pore volume zirconia-silica catalyst support;

e. removing residual water from the product of d by chemically reacting this water with a ketal of the formula $RC(OR)_2R$ in which R is the same or different and is an alkyl group of 1–5 carbon atoms; and

f. calcining the resulting xerocogel at a temperature of about 1000°–1850° F. preparatory to its use as an olefin polymerization catalyst support.

4,279,781

CATALYST FOR THE SYNTHESIS OF METHANOL

Edward K. Dienes; Ray L. Coleman, and Arthur L. Hausberger, all of Louisville, Ky., assignors to United Catalysts Inc., Louisville, Ky.

Filed Oct. 9, 1979, Ser. No. 82,790
Int. Cl.³ B01J *21/04, 23/06, 23/72*
U.S. Cl. 252—463 **11 Claims**

1. A methanol synthesis catalyst precursor, which comprises:

A. a major portion by weight of the oxides of copper and zinc,

B. a minor portion by weight of a thermal stabilizing metal oxide in which:

1. the ratio of copper oxide to zinc oxide, each expressed

as the metal by weight, is in the range of from 2:1 to 3.5:1, and

2. the oxides of copper and zinc are in intimate association with each other and with said thermal stabilizing metal oxide, and in which

C. the concentration of iron oxide inpurity in the total catalyst precursor, expressed as the metal by weight, is less than 150 parts per million in which said impurity is introduced in preparing the catalyst precursor.

4,279,782

APPLICATION OF AN ALUMINA COATING TO OXIDE WHISKER-COVERED SURFACE ON AL-CONTAINING STAINLESS STEEL FOIL

Lloyd R. Chapman, St. Clair Shores, and John F. Watton, Mt. Clemens, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 31, 1980, Ser. No. 135,484
Int. Cl.³ B01J *21/04, 23/86*
U.S. Cl. 252—465 **4 Claims**

1. A method of coating a surface comprising closely spaced oxide whiskers with an adherent ceramic layer, said method comprising:

wetting the whisker covered surface with an aqueous alumina gel, said gel penetrating between the whiskers; and

applying to the still-wet surface a material comprising macroscopic ceramic particles suspended in an aqueous alumina gel, said gels combining to form a continuous alumina gel matrix about said particles and said whiskers that, upon drying and firing, bonds said particles to said whisker surface with improved adhesion.

4,279,783

ELECTRICALLY CONDUCTIVE SILICONE ELASTOMERS

Gerald P. Kehrer, Auburn, Mich., and William G. Smith, Saint Charles, Ill., assignors to Dow Corning Corporation, Midland, Mich.

Filed Apr. 4, 1979, Ser. No. 27,188
Int. Cl.³ D02G *3/00*; H01B *1/06*
U.S. Cl. 252—511 **2 Claims**

1. A silicone composition curable to an electrically conductive silicone elastomer comprising a product obtained by mixing

(A) an electrically conductive curable silicone elastomeric mixture having a viscosity below 1,000 Pa.s at 25° C. and

(B) graphite fibers with an average length of from about 1 mm to about 6 mm, the graphite fibers being present in an amount of from 0.3% to 5.0% by weight based on the weight of the composition.

4,279,784

THERMIONIC EMISSION CATHODES

Akira Misumi, and Shunji Saito, both of Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 26, 1978, Ser. No. 972,873
Claims priority, application Japan, Dec. 26, 1977, 52-155551
Int. Cl.³ H01B *1/02*
U.S. Cl. 252—513 **20 Claims**

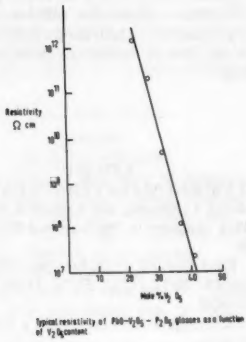
1. A thermionic emission cathode which comprises a base made of a nickel-tungsten series alloy comprising 90 to 70% by weight of nickel and 10 to 30% by weight of tungsten, and an emitter layer, which is formed on the base and which is made from a mixture of (a) tungsten powder or nickel-tungsten alloy powder, (b) Ba_3WO_6 powder and (c) zirconium powder or ZrH_2 powder.

4,279,785

GLASS ENCAPSULATION OF SEMICONDUCTOR DEVICES

Clive E. E. Stewart, Bishops Stortford; William J. N. Rosser, Stansted Mount Fitchet, and Martin P. Ansell, Bath, all of England, assignors to ITT Industries, Inc., New York, N.Y.

Filed Nov. 6, 1979, Ser. No. 91,916
Claims priority, application United Kingdom, Nov. 28, 1978, 46345/78
Int. Cl.³ C03C *3/16, 3/12*; H01B *1/08*
U.S. Cl. 252—518 **5 Claims**



Typical resistivity of PbO–V_2O_5 – P_2O_5 glasses as a function of V_2O_5 content

1. A glass composition consisting essentially of 56 to 58 mol % lead oxide (PbO), 22 to 28 mol % vanadium pentoxide (V_2O_5) and 16 to 20 mol % phosphorus pentoxide (P_2O_5) wherein the bulk resistivity of said glass composition is at least 1×10^{11} ohm cm. and the coefficient of thermal expansion of said glass composition is greater than $120\times10^{-7/°}$ C.

4,279,786

HOMOGENEOUS AQUEOUS ALPHA-OLEFIN SULFONATE COMPOSITION

Shizuo Sekiguchi, Funabashi; Tetsuo Tano, and Kyozo Kitano, both of Chiba, all of Japan, assignors to The Lion Fat & Oil Co., Ltd., Tokyo, Japan

Filed Dec. 12, 1979, Ser. No. 102,827
Claims priority, application Japan, Dec. 26, 1978, 53/162084
Int. Cl.³ C11D *3/34*
U.S. Cl. 252—536 **3 Claims**

1. A homogeneous aqueous alpha-olefin sulfonate composition consisting essentially of:

A. 100 parts by weight, in terms of alpha-olefin sulfonate, of an aqueous solution of at least one alpha-olefin sulfonate having from 10 to 20 carbon atoms; and

B. from approximately 1 to approximately 10 parts by weight of at least one additive selected from the group consisting of sorbic acid, gluconic acid, malic acid and the salts of said acids.

4,279,787

METHOD OF BINDING ANTIGENS TO INSOLUBLE POLYMERIC SUBSTANCES

Menno Huizinga, Amsterdam, Netherlands, assignor to Tetra Consultants Inc., New Rochelle, N.Y.

Filed Jul. 30, 1979, Ser. No. 62,035
Int. Cl.³ C08L *89/00, 5/00*
U.S. Cl. 260—8 **11 Claims**

1. A method for affixing antigenically active material to the surface of a water insoluble hydrophobic polymeric substance which comprises first treating the surface of the water insoluble hydrophobic substance with an aldehyde of the formula OCH—(X)—CHO, where —(X)— may be alkylene, cycloalkyl, aryl, substituted cycloalkyl or substituted aryl; and then

reacting the thus treated polymeric substance with a purified antigenically active material in order to bond said biologically active material to the surface of said polymeric substance.

4,279,788

AQUEOUS POLYISOCYANATE-LIGNIN ADHESIVE

Alan L. Lambuth, Boise, Id., assignor to Boise Cascade Corporation, Boise, Id.

Filed Apr. 18, 1980, Ser. No. 141,381
Int. Cl.³ C08H 5/02; C08L 97/02
U.S. Cl. 260—9 **29 Claims**

1. An aqueous polyisocyanate-lignin adhesive comprising an aqueous solution of lignin solids derived from the chemical pulping of lignocellulose and an adhesive-forming quantity of organic polyisocyanate polymer having a molecular weight of from 200 to 10,000, the water being used in amount sufficient to establish a working adhesive viscosity.

4,279,789

ACRYLIC COPOLYMERIC COATING COMPOSITION

Donald E. Lueddecke, St. Charles, Mo.; John J. Mottine, Jr., Red Bank Township, Monmouth County, N.J., and William C. Vesperman, Bel Air, Md., assignors to Western Electric Company, Inc., New York, N.Y. and Bell Telephone Laboratories, Inc., Murray Hill, N.J.

Division of Ser. No. 967,550, Dec. 7, 1978, Pat. No. 4,227,042. This application Mar. 3, 1980, Ser. No. 126,604
Int. Cl.³ C08L 1/14
U.S. Cl. 260—17 R **10 Claims**

1. A coating composition comprising a binder which comprises (a) 75–90 weight percent of a medium molecular weight methyl methacrylate and ethylhexyl acrylate copolymer, (b) 5–15 weight percent cellulose acetate butyrate having a viscosity of from about 1.9 to 2.1 poise and (c) 5–10 weight percent of a carbalkoxy benzyl phthalate lasticizer which is the condensation product of benzyl phthalate and the esters derived from the condensation of trimethylpentanediol with isobutyric acid.

4,279,790

COMPOSITE MATERIAL COMPOSITIONS USING WASTERPAPER AND METHOD OF PRODUCING SAME

Yoshikazu Nakajima, Musashino, Japan, assignor to Kabushiki Kaisha Mikuni Seisakusho, Tokyo, Japan

Filed Jul. 5, 1979, Ser. No. 54,685
Int. Cl.³ C08L 1/02
U.S. Cl. 260—17.4 R **3 Claims**

1. A composition produced by mixing and beating 100 parts by weight of cut wastepaper pieces of a size less than 30 mm. with a molten mixture consisting essentially of about 70 to 150 parts by weight of thermoplastic resin and about 20 parts by weight of rubber, the cut wastepaper being impregnated with the molten mixture.

4,279,791

RECOVERY OF CERIUM FROM POLYMER DISPERSIONS

Edwin L. Speakman, Clinton, Iowa, assignor to Standard Brands Incorporated, New York, N.Y.

Filed May 8, 1980, Ser. No. 147,775
Int. Cl.³ C08L 3/02
U.S. Cl. 260—17.4 GC **18 Claims**

1. The process for removing cerium (III) from a stable, acidic, aqueous polymeric dispersion having a pH of less than about 5.0 which comprises contacting said dispersion with a strong acid cation exchange resin wherein said cation is selected from the group consisting of hydrogen and hydrogen in combination with sodium, potassium, lithium or ammonium ion thereby adsorbing said cerium (III) onto the resin and thereafter separating said resin along with adsorbed cerium (III) from said dispersion.

4,279,792

COMPOSITIONS INCLUDING MERCAPTOORGANOPOLYSILOXANES AND STANNOUS SALTS OF CARBOXYLIC ACIDS

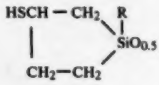
Gary R. Homan, and Chi-long Lee, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Dec. 3, 1979, Ser. No. 99,301
Int. Cl.³ C08L 91/00
U.S. Cl. 260—18 S **5 Claims**

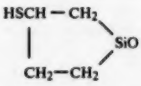
1. A composition of matter comprising a material prepared by mixing

(A) a mercaptoorganopolysiloxane consisting essentially of a combination of units selected from dimethylsiloxane units, trimethylsiloxane units, hydroxydimethylsiloxane units, units of the formula

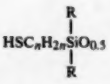
units of the formula



units of the formula



and units of the formula



wherein R is a monovalent radical selected from the group consisting of alkyl radicals of from 1 to 3 carbon atoms inclusive and phenyl radicals; and, n has a value of from 1 to 4 inclusive, there being in said mercaptoorganopolysiloxane an average of greater than two mercapto-containing siloxane units per molecule and no more than 10 mole percent mercapto-containing siloxane units based on the total number of siloxane units in the mercaptoorganopolysiloxane;

(B) a stannous salt of a carboxylic acid selected from the group consisting of those represented by the formula

wherein R^1 is a monovalent acyl radical, said stannous salt being present in an amount of from 0.1 to 10 parts by weight per 100 parts by weight of (A);

(C) a filler in an amount of from 0 to 200 parts by weight per 100 parts by weight of (A); and

(D) an organic peroxide in an amount of from 0 to about 6 parts by weight per 100 parts by weight of (A).

4,279,793

WATER-HARDENABLE MIXTURES

Wolfgang Wellner, and Manfred Hajek, both of Cologne, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 3, 1979, Ser. No. 99,408

Claims priority, application Fed. Rep. of Germany, Dec. 11, 1978, 2853477

Int. Cl.[3] C08G *69/00, 69/26*

U.S. Cl. 260—18 R 9 Claims

1. A water-hardenable mixture comprising

(A) at least one reversibly blocked polyamine; and

(B) at least one compound having at least two cyclic carboxylic acid anhydride groups.

4,279,794

SIZING METHOD AND SIZING COMPOSITION FOR USE THEREIN

David H. Dumas, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Division of Ser. No. 33,618, Apr. 26, 1979, abandoned, which is a continuation of Ser. No. 875,663, Feb. 6, 1978, abandoned. This application Dec. 26, 1979, Ser. No. 106,606

Int. Cl.[3] C08L *63/00*

U.S. Cl. 260—29.2 EP 4 Claims

1. A sizing composition for cellulose fibers consisting essentially of an aqueous emulsion of a hydrophobic cellulose reactive sizing agent selected from the group consisting of ketene dimers, acid anhydrides, and organic isocyanates containing a sizing accelerator, said sizing accelerator being selected from a water-soluble poly(diallylamine)-epihalohydrin resin and a water-soluble poly(N-methyldiallylamine)-epihalohydrin resin in an amount sufficient to increase the off-the-machine sizing effect of the sizing agent, the amount of epihalohydrin used in reaction with the poly(diallylamine) being from about 0.5 mole to about 1.5 moles per mole of secondary amine present in the polymer and the amount used in reaction with the poly(N-methyldiallylamine) being from about 0.5 mole to about 1.5 moles per mole of tertiary amine present in the polymer.

4,279,795

HYDROPHILIC-HYDROPHOBIC GRAFT COPOLYMERS FOR SELF-REINFORCING HYDROGELS

Shuzo Yamashita; Kyoichiro Shibatani; Kiochi Takakura, and Kiyokazu Imai, all of Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed Dec. 28, 1973, Ser. No. 429,207

Claims priority, application Japan, Dec. 29, 1972, 48-3150; Feb. 14, 1973, 48-18634

Int. Cl.[3] C08L *51/00*

U.S. Cl. 260—29.6 RW 13 Claims

1. A copolymer for a self-reinforced and highly bio-compatible hydrogel which comprises (1) a hydrophilic polymer backbone moiety from a free radical polymerizable vinyl monomer capable of forming a hydrophilic polymer and (2) graft moieties attached to said backbone moiety from a hydrophobic macromolecular compound, 5 to 80% based on the weight of the copolymer, having a chain-terminated polymerizable double bond and a molecular weight of 1,000 to 100,000, said copolymer being swelled with water in a degree of an equilibrium water absorption of at least 10% by weight.

4,279,796

CARPET CLEANING/COATING MIXTURE AND METHOD

Kevork W. Tarkinson, Boynton Beach, Fla., assignor to Ann Ward Tarkinson, Boynton Beach, Fla.

Filed Mar. 20, 1980, Ser. No. 132,393

Int. Cl.[3] B08B *3/08*

U.S. Cl. 260—29.6 R 2 Claims

1. In an aqueous dispersion containing a nonfluorinated vinyl polymer and at least 5 weight percent of a perfluoroalkyl ester of a carboxylic acid of from 3 to 30 carbon atoms in amounts effective to provide substantial dry soil resistance in carpet to which said aqueous dispersion is applied, the improvement which comprises:

an additional ingredient in said aqueous dispersion consisting of hydrogen peroxide in an amount effective to remove soil from carpet to which said aqueous dispersion is applied followed by buffing the carpet to promote foaming of the aqueous dispersion.

4,279,797

SOLVENT BLENDS FOR ETHYLENE COPOLYMERS

Alfred R. Nelson, Edenville, and Kenneth E. Johnsen, Midland, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 29, 1979, Ser. No. 98,466

Int. Cl.[3] C08K *5/05*

U.S. Cl. 260—33.4 R 9 Claims

1. A solution comprising a solvent blend which comprises from about 5 to about 35 percent by weight of an acyclic alcohol having from 2 to 12 carbon atoms, based upon the total weight of said solvent blend, about 3 percent to about 90 percent by weight of a monocyclic aromatic hydrocarbon, based upon the total weight of said solvent blend, and from about 5 to about 92 percent by weight of a halogenated C_2 hydrocarbon, based upon the total weight of said solvent blend, and a copolymer of ethylene and ethylenically unsaturated carboxylic acid having from about 17 to about 30 percent by weight of said carboxylic acid, based on the total weight of said copolymer, characterized in that said copolymer remains dissolved at ambient temperatures.

4,279,798

POLYDIENE POLYALKYLENE OXIDE BLOCK COPOLYMERS AND THEIR USE AS ALCOHOL HYDROCARBON DISPERSANTS

Sundar L. Aggarwal, Akron; Ivan G. Hargis, Tallmadge, and Russell A. Livigni, Akron, all of Ohio, assignors to The General Tire & Rubber Company, Akron, Ohio

Filed Mar. 28, 1980, Ser. No. 134,854

Int. Cl.[3] C08L *53/00;* C08K *5/01, 5/05*

U.S. Cl. 260—33.4 R 2 Claims

1. In a dispersion containing alcohol, and liquid hydrocarbon, the improvement comprising the presence of a small but effective amount to stabilize the dispersion of a block copolymer having within its molecular structure at least two segments, segment A being a polydiene containing a major portion of a 1,4 structure diene, and segment B being a double metal cyanide complex catalyst polymerized alkylene oxide.

4,279,799

LOADED POLYURETHANE ARTICLES

Cline J. MacGregor, Lancaster, and Roy A. Parker, Athens, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Oct. 31, 1979, Ser. No. 89,820

Int. Cl.[3] C08L *75/04*

U.S. Cl. 260—37 N 4 Claims

1. A polyurethane composition containing a sufficient amount of milled glass fibers to exhibit ansitropic properties, said ansitropic properties being reduced by the presence of an effective amount of mica.

4,279,800

HIGH SOLIDS PIGMENTED COATING COMPOSITION CONTAINING A BLEND OF ESTER DIOLS AND A CURING AGENT

Ritse E. Boomgaard, Oegstgeest; Roelof Buter, Dieren, and Aleidus A. Kiffen, Angerlo, all of Netherlands, assignors to Akzo NV, Arnhem, Netherlands

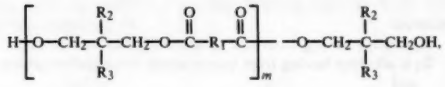
Filed Apr. 15, 1980, Ser. No. 140,482

Claims priority, application Netherlands, Apr. 19, 1979, 7903056

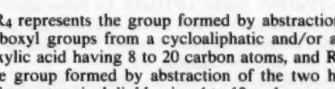
Int. Cl.³ C08L *61/28, 67/02*

U.S. Cl. 260—39 P 8 Claims

1. A pigment-containing high solids coating composition prepared from a blend of ester diols as binder and a curing agent for the binder, characterized in that as ester diol there is used a mixture of (a) 20–80 mole % of a compound having the general formula:



where R_1 represents the group formed by abstraction of the two carboxyl groups from a cycloaliphatic and/or aromatic dicarboxylic acid having 8 to 20 carbon atoms and R_2 and R_3 may be the same or different and represent a hydrogen atom and/or a hydrocarbon group having 1 to 9 carbon atoms, and m is a number of 1–4, and of (b) 80–20 mole % of a compound having the general formula



where R_4 represents the group formed by abstraction of the two carboxyl groups from a cycloaliphatic and/or aromatic dicarboxylic acid having 8 to 20 carbon atoms, and R_5 represents the group formed by abstraction of the two hydroxyl groups from a terminal diol having 4 to 12 carbon atoms in the main chain, and n is a number of 1–4.

4,279,801

THERMOPLASTIC MOLDING COMPOSITIONS OF A LINEAR POLYESTER AND A POLY(ESTER URETHANE)

Morton Kramer, Pittsfield, Mass., and Allen D. Wambach, Evansville, Ind., assignors to General Electric Company, Pittsfield, Mass.

Filed Jul. 2, 1975, Ser. No. 592,769

Int. Cl.³ C08L *67/02, 75/06*

U.S. Cl. 260—40 R 8 Claims

1. A thermoplastic molding composition which comprises:
(a) from 95 to 75 parts by weight of poly(1,4-butylene terephthalate); and
(b) from 5 to 25 parts by weight of a thermoplastic poly(ester-urethane) elastomer.

4,279,802

METHOD FOR THE PRODUCTION OF A PIGMENT PREPARATION FOR COLORING LINEAR POLYESTERS IN THE MELT

Andreas Laely, Allschwil; Günther Zwahlen, Dornach, both of Switzerland, and Lothar Buxbaum, Lindenfels, Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jul. 20, 1979, Ser. No. 59,426

Claims priority, application Switzerland, Aug. 1, 1978, 8218/78; Jun. 21, 1979, 5803/79

Int. Cl.³ C08L *67/00*

U.S. Cl. 260—40 P 8 Claims

1. A method for the production of a pigment preparation for colouring linear polyesters in the melt, which comprises forming a concentrate from 20 to 80 parts of pigment and 80 to 20 parts of a linear thermoplastic polyester comprising a polycondensate of dicarboxylic acids with diols, said acids of aromatic, aliphatic or mixtures thereof which melts between 60° and 160° C., by kneading in the presence of an organic or inorganic salt and a solvent which serves to increase the distribution of the pigment in the thermoplastic polyester and at least partially solubilize said polyester, mixing said concentrate with a fiber forming linear polyester comprising a polycondensate of terephthalic acid, esters thereof, or mixtures of terephthalic acid and other dicarboxylic acids, with a glycol of the formula $HO—(CH)_n—OH(n=2–10)$, 1,4-di(hydroxymethyl)cyclohexane, or mixtures of said glycols with other diols, or a polycondensate of a glycol ether of a hydroxybenzoic acid, melting the concentrate-polyester mixture and processing it to granules.

4,279,803

POLYESTER OF PHENYL-4-HYDROXYBENZOIC ACID AND 4-HYDROXYBENZOIC ACID AND/OR 6-HYDROXY-2-NAPHTHOIC ACID CAPABLE OF FORMING AN ANISOTROPIC MELT

Gordon W. Calundann, N. Plainfield, N.J., assignor to Celanese Corporation, New York, N.Y.

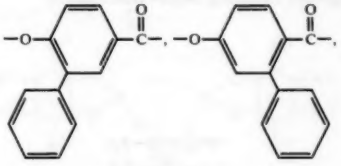
Filed Mar. 10, 1980, Ser. No. 128,778

Int. Cl.³ C08L *67/04*

U.S. Cl. 260—40 P 39 Claims

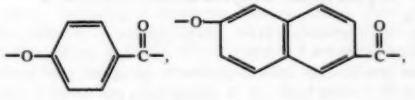
1. A melt processable wholly aromatic polyester capable of forming an anisotropic melt phase at a temperature below approximately 350° C. consisting essentially of moieties I and II wherein:

I is selected from the group consisting of:



and mixtures thereof, and

II is selected from the group consisting of:



and mixtures thereof,

wherein moiety I is present in a concentration of approximately 20 to 90 mole percent, and moiety II is present in a concentration of approximately 10 to 80 mole percent, and wherein the total molar concentration of moieties I and II in said wholly aromatic polyester is at least 90 percent.

4,279,804

PIPERIDINE COMPOUNDS AND THEIR USE AS STABILIZERS FOR SYNTHETIC POLYMERS

Giuseppe Cantatore, Casalecchio Di Reno, and Paolo Cassandrini, Bologna, both of Italy, assignors to Chimosa Chimica Organica S.p.A., Italy

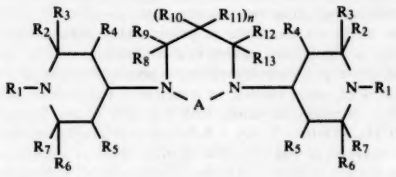
Filed Mar. 13, 1979, Ser. No. 20,088

Claims priority, application Italy, Jul. 28, 1978, 26239 A/78

Int. Cl.³ C07D *239/04*

U.S. Cl. 260—45.8 N 16 Claims

1. Compound of formula

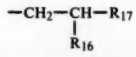

(I)

in which:

R_1 represents hydrogen, —0°, —CN, a linear or branched alkyl containing 1 to 20 carbon atoms, an alkenyl or alkinyl containing 2 to 20 carbon atoms, benzyl, benzyl substituted by 1 to 3 alkyls containing 1 to 4 carbon atoms, hydroxybenzyl, hydroxybenzyl substituted by 1 to 3 alkyls containing 1 to 4 carbon atoms; or

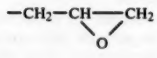
a —COR_{14}, —$COOR_{14}$, —CH_2COOR_{14} or —$CONR_{14}R_{15}$ radical in which R_{14}, R_{15}, which can be equal or different, represent a linear or branched alkyl containing 1 to 20 carbon atoms, an alkenyl containing 2 to 20 carbon atoms, a cycloalkyl containing 5 to 12 carbon atoms, phenyl, phenyl substituted by 1 to 3 alkyls containing 1 to 8 carbon atoms, hydroxyphenyl, hydroxyphenyl substituted by 1 to 3 alkyls containing 1 to 4 carbon atoms, an aralkyl containing 7 to 12 carbon atoms, or when bonded to N they can be hydrogen, or together with the N to which they are bonded they can form from five to eight membered nitrogenous containing heterocyclic rings or

a



radical in which R_{16} is hydrogen or methyl, and R_{17} is —OH, —OR_{14}, —$OCOR_{14}$ or —$CONR_{14}R_{15}$, in which R_{14} and R_{15} are always as heretofore defined; or

a



radical;

R_2, R_3, R_6, R_7, which can be equal or different, represent an alkyl containing 1 to 6 C atoms;

R_4, R_5, which can be equal or different, represent hydrogen or an alkyl containing 1 to 6 C atoms;

R_8, R_9, R_{10}, R_{11}, R_{12}, R_{13}, which can be equal or different, represent hydrogen or an alkyl containing 1 to 6 carbon atoms; n is zero or 1;

A represents >C=O, >C=S, or >CH—R_{18} in which R_{18} is hydrogen, an alkyl containing 1 to 20 carbon atoms, a cycloalkyl containing 5 to 12 carbon atoms, phenyl, a hydroxyphenyl, a hydroxyphenyl substituted by 1 to 3 alkyls containing 1 to 4 carbon atoms, benzyl, or benzyl substituted by 1 to 3 alkyls containing 1 to 4 carbon atoms.

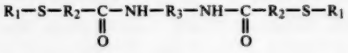
4,279,805

ALKYLENE-BIS-THIOALKANOIC ACID AMIDE STABILIZERS FOR SYNTHETIC RESINS AND SYNTHETIC RESIN COMPOSITIONS CONTAINING THE SAME

Toshio Ohzeki, Urawa, and Takanori Semba, Matsudo, both of Japan, assignors to Argus Chemical Corporation, Brooklyn, N.Y.

Filed Dec. 7, 1979, Ser. No. 101,300
Claims priority, application Japan, Jan. 10, 1979, 54-1932
Int. Cl.³ C08K 5/20; C07C 103/38
U.S. Cl. 260—45.9 NC **36 Claims**

1. Alkylene bis-thioalkanoic acid amide stabilizers having the formula:



wherein

R_1 is alkyl having from one to about fifty carbon atoms;

R_2 is alkylene having from one to about three carbon atoms; and

R_3 is alkylene having from two to about twelve carbon atoms.

17. A polyvinyl chloride resin composition having improved resistance to deterioration when heated at 350° F., comprising a polyvinyl chloride resin and an alkylene bis-thioalkanoic acid amide stabilizer in accordance with claim **1**.

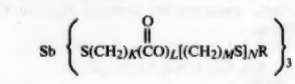
4,279,806

ANTIMONY MERCAPTIDES AS PROCESSING STABILIZERS FOR VINYL HALIDE RESINS

Charles N. Muldrow, Jr., East Windsor, N.J., assignor to Associated Lead Inc., Philadelphia, Pa.

Continuation-in-part of Ser. No. 936,121, Aug. 23, 1978, abandoned. This application Aug. 8, 1979, Ser. No. 63,597
Int. Cl.³ C08K 5/59; C07D 9/90
U.S. Cl. 260—45.75 B **8 Claims**

1. A vinyl halide resin composition comprising a vinyl halide resin and a stabilizer composition which comprises an antimony mercaptide having the following formula:



wherein

K is 1 to 4;

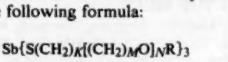
L is 0 to 1;

M is 1 to 4;

N is 1 to 4;

R is an alkyl, alkenyl or alkynyl having 1 to 18 carbon atoms and combinations thereof.

3. A vinyl halide resin composition comprising a vinyl halide resin and a stabilizer which comprises an antimony mercaptide of the following formula:



wherein

K is 1 to 4;

M is 1 to 4;

N is 1 to 4;

R is an alkyl, alkenyl or alknyl having 1 to 18 carbon atoms and combinations thereof.

4,279,807
SYNERGISTIC HEAT STABILIZER COMPOSITIONS CONTAINING AN ANTIMONY OR A BISMUTH COMPOUND

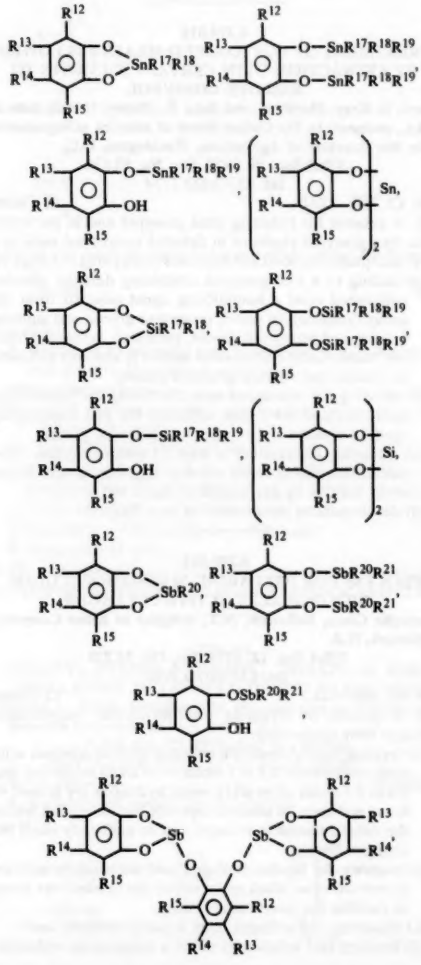
Robert D. Dworkin, Old Bridge, N.J., assignor to M&T Chemicals Inc., Woodbridge, N.J.

Division of Ser. No. 72, Jan. 2, 1979, Pat. No. 4,231,895. This application Dec. 13, 1979, Ser. No. 103,364

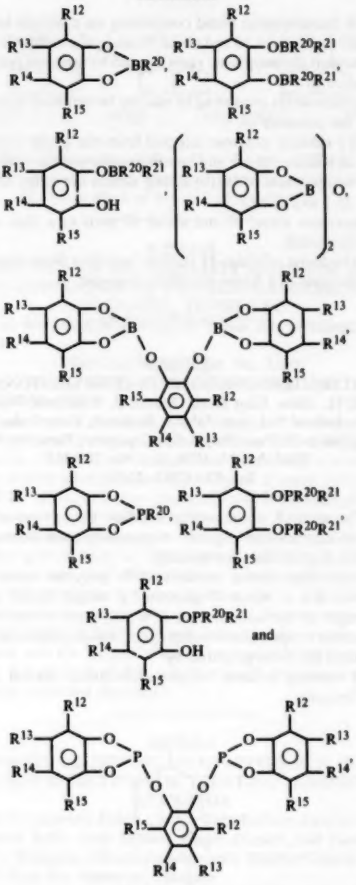
Int. Cl.[3] **C08K** *5/57, 5/56, 5/53, 5/52, 5/36, 5/13*

U.S. Cl. 260—45.75 B **13 Claims**

1. A vinyl halide resin composition comprising a vinyl chloride resin, an effective amount of a heat stabilizer for said resin and a synergistically effective amount of a synergist for said heat stabilizer, wherein the heat stabilizer exhibits the general formula MX_3 wherein M is antimony or bismuth and X represents the residue obtained by removing (1) the hydrogen atom from a carboxy (—COOH) group of a mono- or polycarboxylic acid or (2) the hydrogen atom from the sulfur atom of a mercaptan, mercaptoacid ester or mercaptoalkanol ester, and the synergist exhibits a general formula selected from the group consisting of



-continued



wherein R^{12}, R^{13}, R^{14} and R^{15} are individually selected from the group consisting of hydrogen, halogen, amine, nitro, nitroso, sulfonyl, hydroxymethylene, alkyl containing from 1 to 20 carbon atoms and aryl, R^{17}, R^{18} and R^{19} are individually selected from the group consisting of alkyl, aryl, alkaryl and aralkyl wherein any alkyl group or the alkyl portion of any alkaryl or aralkyl group contains from 1 to 20 carbon atoms, and R^{20} and R^{21} are individually selected from the group consisting of hydroxyl, alkoxy and aryloxy.

4,279,808
POLYBROMOSTYRENE RESIN

Edwin D. Hornbaker, and Allan A. Eisenbraun, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Filed Feb. 14, 1980, Ser. No. 121,311

Int. Cl.[3] **C08F** *275/00;* **C08K** *3/22;* **C08L** *51/00*

U.S. Cl. 260—45.75 B **15 Claims**

1. Moldable, flame resistant thermoplastic resins formed by addition polymerization of

(a) monomers consisting of nuclear brominated styrenes in the presence of

(b) a rubbery polymer selected from the group consisting of a diene rubber and an ethylenepropylene rubber,

the weight ratio of (a):(b) falling within the range of about 25:1 to 2:1.

11. A thermoplastic blend comprising on a weight basis:

(1) Between about 10 and about 70 parts of a moldable, flame resistant thermoplastic resin formed by addition polymerization of

(a) monomers consisting of nuclear brominated styrenes in the presence of

(b) a rubbery polymer selected from the group consisting of a diene rubber and an ethylenepropylene rubber, the weight ratio of (a):(b) falling within the range of about 25:1 to 2:1; and

(2) Between about 90 and about 30 parts of a high impact polystyrene.

14. The blend of claim **11** further including from about 1 to about 10 parts of a flame retardant synergist.

4,279,809

STABILIZED POLYOLEFIN COMPOSITIONS

John L. H. Allan, Glen Rock; Arnold B. Finestone, Woodcliff Lake, both of N.J., and John J. Roderick, Avon Lake, Ohio, assignors to El Paso Polyolefins Company, Paramus, N.J.

Filed Jul. 14, 1976, Ser. No. 705,303

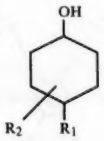
Int. Cl.³ C08L *23/00*

U.S. Cl. 260—45.95 C **22 Claims**

1. The method of imparting stability to a mono-α-olefin polymer composition against copper-activated accelerated oxidative degradation, comprising:

incorporating into a mono-α-olefin polymer resin from about 0.1 to about 10 percent by weight based on the weight of the composition of a polymeric compound as the sole copper deactivating agent, which polymeric compound has been prepared by:

(a) reacting at least one para-substituted phenol of the formula:



wherein R_1 is a C_3–C_{30} group selected from alkyl, cycloalkyl, alkaryl or aryl and R_2 is either hydrogen, a sulfonic acid group or a sulfonic acid salt group, with an aldehyde or ketone of the formula:

wherein R_3 and R_4 independently from each other can be either hydrogen or a C_1–C_{36} group selected from alkyl, cycloalkyl, alkaryl or aryl, in a molar ratio of aldehyde or ketone to phenol of at least about 2:1 in the presence of an alkaline catalyst; and

(b) reacting the product of step (a) with hydrogen sulfide or a polysulfide of the formula:

$HS(R_5)SH$

wherein R_5 is a C_2–C_{20} group selected from alkylene, cycloalkylene, alkarylene or arylene, in about a 1:1 molar ratio of hydrogen sulfide or polysulfide to the phenol used in step (a).

4,279,810

EASILY SPLIT SUBSTRATES FOR THE QUANTIFICATION OF PROTEASES

Karl G. Claeson, Lidingö; Leif E. Aurell, Särö; Leif R. Simonsson, Hising Backa, and Salo Arielly, Kungsbacka, all of Sweden, assignors to Kabi AB, Stockholm, Sweden

Filed Jan. 29, 1979, Ser. No. 7,447

Claims priority, application Sweden, Feb. 7, 1978, 7801373

Int. Cl.³ C07C *103/52;* **C01G** *3/00*

U.S. Cl. 260—112.5 R **14 Claims**

1. Easily splitable enzyme substrate suitable for the quantification of proteases having the general formula

$$R_1—p\text{-}Glu—A_1—A_2—NH—R_2,$$

wherein

R_1 is H or a protective group;

A_1 is Gly, Ala, Val, Leu, Ile, Ser, Thr, Pro, Pip, Phe or Tyr;

A_2 is Arg or Lys; and

wherein $—NH—R_2$ is a chromogenic or fluorogenic group which is splittable by enzymatic hydrolysis to form a cleavage product of the formula $H_2N—R_2$ the amount of which can be quantified.

4,279,811

TREATMENT OF COTTONSEED MEALS FOLLOWED BY EXTRACTION WITH CERTAIN SOLVENTS TO REMOVE GOSSYPOL

Marie S. Gray, Harahan, and John P. Cherry, Slidell, both of La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Jun. 29, 1979, Ser. No. 53,474

Int. Cl.³ A23J *1/14*

U.S. Cl. 260—123.5 **11 Claims**

1. A process for reducing total gossypol and in particular toxic free gossypol pigments in defatted cottonseed meal to a level acceptable for food and feed uses comprising the steps of:

(a) adding to a free gossypol containing defatted glanded cottonseed meal a humidifying agent selected from the group consisting of water, propylene glycol, and aqueous solutions of propylene glycol, methanol, ethanol, propanol, butanol, and methyl ethyl ketone in amounts sufficient to weaken and rupture gossypol glands;

(b) allowing the cottonseed meal containing the humidifying agent to stand for a time sufficient for said humidifying agent to weaken and rupture said gossypol glands;

(c) extracting the product of step (b) with methylene chloride sufficiently to obtain a free gossypol content of below about 0.045% by dry weight of meal; and

(d) desolventizing the product of step (c).

4,279,812

PROCESS FOR PREPARING MACROMOLECULAR BIOLOGICALLY ACTIVE COLLAGEN

Gheorghe Cioca, Belleview, N.J., assignor to Seton Company, Newark, N.J.

Filed Sep. 12, 1979, Ser. No. 74,738

Int. Cl.³ C07G *7/00*

U.S. Cl. 260—123.7 **12 Claims**

1. A process of preparing macromolecular reconstituted collagen fiber comprising:

(a) treating natural insoluble collagen with an aqueous solution comprised of 0.5 to 1 molar of an alkali sulfate salt and 1.0 to 2.5 molar of an alkali metal hydroxide for at least 48 hours and up to 96 hours to saponify fats suspended within the natural insoluble collagen and to uniformly swell the collagen fibers;

(b) treating the fat free collagen with an aqueous solution comprised of an alkali metal sulfate for at least four hours to stabilize the interfibular bonds;

(c) dissolving the collagen in an aqueous solution; and

(d) freezing said solution to effect a temperature reduction

rate of −18° C. to −24° C./hour to a temperature of −60° C. to −70° C.;

(e) vacuum drying said solution at 10^{-3} to 10^{-5} torr for at least 12 hours to obtain collagen having an average molecular weight of 383,000 to 460,000.

4,279,813

AQUEOUS PROCESS FOR THE PREPARATION OF AROMATIC PHOSPHORUS COMPOUNDS

Otto Schallner, and Rainer Hamprecht, both of Cologne, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 29, 1979, Ser. No. 43,496

Claims priority, application Fed. Rep. of Germany, Jul. 6, 1978, 2829710

Int. Cl.³ C09B *43/00*

U.S. Cl. 260—163 **11 Claims**

1. In the preparation of a phosphorus-containing compound of the formula

(I)

by reacting a phosphorus compound of the formula

(II)

with an activated aromatic halogen compound of the formula

A—Hal (III)

wherein

A represents an aromatic radical substituted by substituents with positive Hammet σ-para values,

Hal represents halogen,

X and Y independently of one another represent —OR, —SR, $—NR_2$ or R,

R represents C_1–C_6-alkyl, C_1–C_6-alkyl substituted by C_1–C_4-alkoxy, phenyl or CN, cyclohexyl, cyclohexyl substituted by methyl or Cl, phenyl, or phenyl substituted by C_1–C_4-alkyl, C_1–C_4-alkoxy, NO_2 or Cl,

Z represents —OR', —SR, or $—NR'_2$ and

R' represents H or R,

in the presence of a Cu-II salt, the improvement comprising carrying out the reaction in an aqueous solution at a pH of 6–9.

4,279,814

SALICYL PHENYL NAPHTHYL TRISAZO DI AND TRISULFONIC DEVELOPED DIRECT BLACK DYES

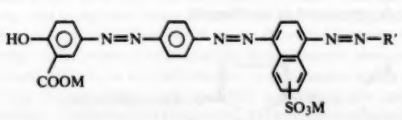
Howard L. Smith, Douglassville, Pa., assignor to Crompton & Knowles Corporation, New York, N.Y.

Filed Jun. 27, 1979, Ser. No. 52,622

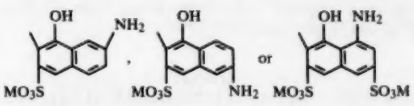
Int. Cl.³ C09B *31/22, 33/22, 33/28;* D06P *3/32*

U.S. Cl. 260—173 **11 Claims**

1. A compound having the structure:



wherein R' is



and where M is —H, —Na, —K, —Li or $—N(R)_3H$ and R represents the same or different substituents selected from the group —H, lower alkyl or lower hydroxyalkyl.

4,279,815

PRODUCTION OF HIGH-QUALITY AROMATIC AMINO AZO COMPOUNDS BY THE REARRANGEMENT OF 1,3-DIARYL TRIAZENES

Frank E. Herkes, 2530 Dartmouth Woods Rd., Wilmington, Del. 19810

Filed Jan. 9, 1979, Ser. No. 2,010

Int. Cl.³ C07C *107/06, 115/00;* C09B *27/00*

U.S. Cl. 260—205 **10 Claims**

1. A method of preparing a carbocyclic aromatic amino azo compound with a high para/ortho isomer ratio and minimum formation of binuclear byproducts comprising contacting a strong acid at a temperature in the range of about from 50° C. to 120° C. with a solution separated from the gas/liquid product obtained by the treatment of an excess of a primary carbocyclic aromatic monoamine with a gas containing nitric oxide and nitrogen dioxide to effect the diazotization-coupling of said monoamine, said solution being substantially homogeneous at said temperature and containing said primary carbocyclic aromatic monoamine and up to about 30 percent by weight of a dissolved 1,3-diaryl triazene based on the weight of said solution, and the weight of said strong acid being about from 0.4 to 2.0 percent of the weight of said triazene-containing solution contacted therewith.

4,279,816

N-FORMYL LEUROSINE DERIVATIVES IN A DOSAGE FORM EFFECTIVE FOR TREATING LYMPHOID LEUKEMIA

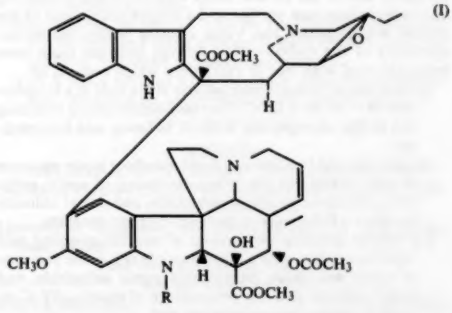
Karola Jovanovics; Kalman Szasz; Bela Kellner; Laszlo Nemeth; Zsuzsa Relle; Emil Bittner; Eszter Dezseri, and Janos Eles, all of Budapest, Hungary, assignors to Richter Gedeon Vegyszeti Gyar Rt., Budapest, Hungary

Division of Ser. No. 422,100, Dec. 5, 1973, Pat. No. 4,189,432. This application Feb. 5, 1975, Ser. No. 547,374

Int. Cl.³ C07D *519/04;* A61K *31/475*

U.S. Cl. 260—244.4 **2 Claims**

1. A compound of the formula I in a dosage form effective for treating lymphoid leukemia in a dosage of 0.3 to 5.0 mg/kg:



(I)

wherein R stands for formyl, or a pharmaceutically acceptable acid addition salt thereof, in pure crystalline form.

2. N-formyl-leurosine monosulfate in a dosage form effective for treating lymphatic leukemia in a dosage form of 0.3 to 5.0 mg/kg and in pure crystalline form.

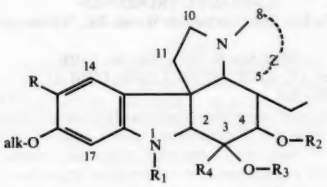
4,279,817

METHOD FOR PRODUCING DIMER ALKALOIDS

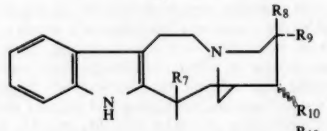
James P. Kutney, Vancouver, Canada, assignor to The United States of America as represented by the Department of Health & Human Services, Washington, D.C.

Filed May 30, 1975, Ser. No. 582,373
Int. Cl.³ C07D *519/04*
U.S. Cl. 260—244.4 **5 Claims**

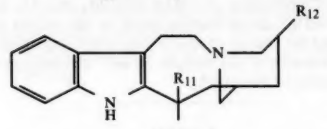
1. A process for the production of compounds represented by the following formulas



I



II



III

wherein in Formula I
Alkyl=CH_3
R_1=CH_3
R_2=$COCH_3$
R_3=H
R^4=$COOCH_3$
Z=—CH=CH—
R=II or III
R^7=$COOCH_3$
R^8=H or C_2H_5
R^9=H or C_2H_5
R^{10}=H
R^{11}=$COOCH_3$
R^{12}=C_2H_5

wherein the process is for the synthesis of a dimer derived from an indole unit of the natural Iboga alkaloid family containing an aza bicyclo-octane portion and a dihydroindole unit of the natural Aspidosperma and Vinca alkaloid family, the stereochemistry of the carbon-carbon linkage between these units being identical with that of vinblastine which consists of

(a) forming an N-oxide intermediate in the cold at a temperature of −10° to +10° C. from said indole unit by oxidizing the bridge nitrogen and without isolating said intermediate;

(b) treating said N-oxide indole intermediate in the presence of one member of the group consisting of acetic anhydride, halogenated acetic anhydride, and acetyl chloride to effect a Polonovski-type fragmentation reaction;

(c) without isolating the product of step (b), coupling said reaction product with a dihydroindole unit in the presence of acetic anhydride, halogenated acetic anhydride, and acetyl chloride at a low temperature of about −10° C. to +10° C. under inert conditions; and

(d) subsequently, without isolating said coupled product, reducing the immonium nitrogen on the indole unit by reacting with aqueous alkali metal borohydride to produce the dimer,

in which the improvement comprises in step (a) the non-isolation of said intermediate.

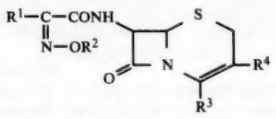
4,279,818

SYN-ISOMERS OF 7-[2-ALKOXYIMINO-2-(2-AMINO-THIAZOL-4-YL)ACETAMIDO]-3-[NITROBENZOYL-, OR BENZOYL-OXYMETHYL]-3-CEPHEM-4-CARBOXYLIC ACID

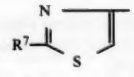
Takao Takaya, Kawanishi; Takashi Masugi, Kitamachi; Hisashi Takasugi, Kohamanishi, and Hiromu Kochi, Sakai, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 767,700, Feb. 11, 1977, Pat. No. 4,166,115. This application Mar. 20, 1978, Ser. No. 887,999
Claims priority, application United Kingdom, Apr. 12, 1976, 14916/76; Jun. 7, 1976, 23490/76; Japan, Oct. 19, 1976, 51-125826
Int. Cl.³ A61K *31/545*; C07D *501/34*
U.S. Cl. 424—246 **4 Claims**

1. Syn-isomer of 3,7-disubstituted-3-cephem-4-carboxylic acid compounds of the formula:



in which
R^1 is



wherein R^7 is amino
R^2 is lower alkyl;
R^3 is carboxy; and
R^4 is benzoyloxymethyl or nitrobenzoyloxymethyl.

4. An antibacterial composition comprising a compound of claim 1 or pharmaceutically acceptable salt thereof in association with a pharmaceutically acceptable non-toxic carrier or excipient.

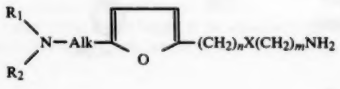
4,279,819

AMINOALKYL FURAN DERIVATIVES

Barry J. Price, Hertford; John W. Clitherow, Sawbridgeworth, and John Bradshaw, Ware, all of England, assignors to Allen & Hanburys Ltd., England

Division of Ser. No. 818,762, Jul. 25, 1977, Pat. No. 4,128,658. This application Oct. 13, 1978, Ser. No. 951,025
Claims priority, application United Kingdom, Aug. 4, 1976, 32465/76; Dec. 6, 1976, 50685/76; May 13, 1977. 20187/77
Int. Cl.³ C07D *307/52, 405/06*
U.S. Cl. 260—326.5 S **9 Claims**

1. A compound of the formula



(II)

wherein R_1 and R_2 independently represent hydrogen, alkyl of 1 to 3 carbon atoms or phenethyl;

X is —S—;

Alk denotes methylene;

m is 2 or 3; and

n is 1.

4,279,820

PROCESS FOR PREPARING 2-PYRROLIDONES

Johannes G. M. Nieuwkamp, Limbricht, Netherlands, assignor to Stamicarbon B.V., Geleen, Netherlands

Filed Mar. 27, 1980, Ser. No. 136,115

Claims priority, application Netherlands, Apr. 1, 1979, 7902537

Int. Cl.³ C07D *207/38*

U.S. Cl. 260—326.5 FM 10 Claims

1. In a process for preparing 2-pyrrolidone comprising the steps of catalytically hydrogenating succinonitrile in the liquid phase, in the presence of ammonia, and then hydrolyzing the resulting reaciton product with water and thereafter recovering the 2-pyrrolidone product,

the improvement consisting essentially of conducting the hydrogenation step at a temperature between about 40° to 150° C. by passing succinonitrile, together with a stream of hydrogen at a partial hydrogen pressure of 100 to 35,000 kPa, through a fixed bed of nickel catalyst having a nickel content in the amount of from 5 to about 80% by weight, said catalyst carried on an alkaline carrier that is the oxide, hydroxide or carbonate of an alkaline earth metal, an alkali metal, thorium, zirconium or mixtures thereof.

4,279,821

PROCESS FOR PREPARING 3-AZABICYCLO(3.1.0)HEXANE-2-CARBOXYLIC ACID

Janet A. Day, Gillingham; Barry R. J. Devlin, Sittingbourne, and Robert J. G. Searle, Green, all of England, assignors to Shell Oil Company, Houston, Tex.

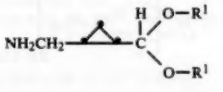
Division of Ser. No. 49,374, Jun. 18, 1979, Pat. No. 4,255,334. This application Jul. 7, 1980, Ser. No. 165,996

Claims priority, application United Kingdom, Jun. 27, 1978, 27978/78

Int. Cl.³ C07D *209/52*

U.S. Cl. 260—326.27 2 Claims

1. A process for preparing 3-azabicyclo(3.1.0)hexane-2-carboxylic acid which comprises treating at a temperature of from about 40° C. to about 120° C. a compound of the formula:



wherein each R^1 is alkyl and contains from one to four carbon atoms, said compound being in the cis-isomeric configuration, with a stoichiometric excess of up to about ten percent of a cyanide in the presence of at least the stoichiometric amount of an alkane carboxylic acid of from two to five carbon atoms and treating the resulting crude product containing the corresponding 3-alkanoyl-3-azabicyclo(3.1.0)hexane-2-carbonitrile with a stoichiometric amount of a strong inorganic acid.

4,279,822

N-(1-SUBSTITUTED-3-PYRROLIDINYL)BENZAMIDES

Albert D. Cale, Jr., Mechanicsville, and Charles A. Leonard, Richmond, both of Va., assignors to A. H. Robins Company, Inc., Richmond, Va.

Continuation of Ser. No. 658,990, Feb. 18, 1976, abandoned, which is a continuation-in-part of Ser. No. 518,125, Oct. 25, 1974, abandoned, which is a continuation of Ser. No. 340,417, Mar. 12, 1973, abandoned, which is a continuation-in-part of Ser. No. 240,840, Apr. 30, 1972, abandoned. This application Dec. 6, 1976, Ser. No. 747,762

Int. Cl.³ C07D *207/14;* A61K *31/40*

U.S. Cl. 260—326.47 4 Claims

1. N-(1-cyclohexyl-3-pyrrolidinyl)-4-acetamidobenzamide.

2. N-(1-cyclohexyl-3-pyrrolidinyl)-2-methoxy-5-sulfamoylbenzamide.

3. The fumarate salt of N-(1-cyclohexyl-3-pyrrolidinyl)-2-methoxy-4-amino-5-chlorobenzamide.

4. N-(1-cyclohexyl-3-pyrrolidinyl)-2-methoxy-4-amino-5-chlorobenzamide.

4,279,823

THALLATION CARBONYLATION OF ARENES

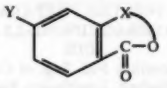
Richard C. Larock, Ames, Iowa, assignor to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Dec. 11, 1979, Ser. No. 102,567

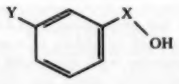
Int. Cl.³ C07D *307/83, 311/00*

U.S. Cl. 260—343.21 10 Claims

1. A process of synthesis of certain five membered ring lactones and six membered ring lactones of the formula:



said method comprising reacting an aryl alcohol of the formula:



with an electrophilic thallium salt in the presence of an organic solvent for said reactants to provide an arylthallium intermediate compound; and

carbonylating under a substantially ambient pressure and temperature, said arylthallium compound by reacting with carbon monoxide in the presence of an inorganic alkali metal halide salt and magnesium oxide and a catalytically effective amount of noble metal carbonylation catalysts to provide said lactones,

with Y being the same in both the starting aryl alcohol and the lactone, and being selected in each instance from the group of hydrogen, methoxy and hydroxy,

with X being selected from the group consisting of methylene, dimethylene, cis-cyclohexyl and trans-cyclohexyl.

4,279,824

METHOD AND APPARATUS FOR PROCESSING HERBACEOUS PLANT MATERIALS INCLUDING THE PLANT CANNABIS

Laurence O. McKinney, 881 Massachusetts Ave., Cambridge, Mass. 02139

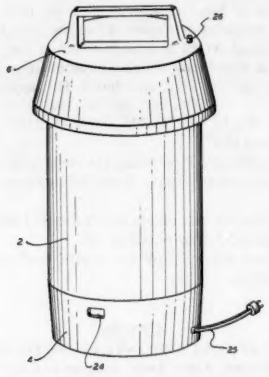
Filed Nov. 1, 1979, Ser. No. 90,375

Int. Cl.³ C07D *311/78*

U.S. Cl. 260—345.3 10 Claims

1. A method of treating a plant material consisting essentially of the plant cannabis, which contains a chemical ingredi-

ent comprising an organic carboxylic acid, which method comprises placing the plant material in a fluid medium which is essentially non-oxidizing to said plant material, and heating said plant material while in said fluid medium at a temperature



of from about 95° C. to about 120° C. to cause the decarboxylation of said carboxylic acid, whereby said plant material contains the maximum possible amount of delta-9-tetrahydrocannabinol.

4,279,825

PROCESS FOR THE PREPARATION OF 1,4-DIAMINOANTHRAQUINONE-2,3-DISULPHONIC ACID

Reinold Schmitz, Odenthal, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 9, 1979, Ser. No. 83,131

Claims priority, application Fed. Rep. of Germany, Oct. 26, 1978, 2846622

Int. Cl.³ C07L *143/665*

U.S. Cl. 260—371 **5 Claims**

1. A process for the preparation of 1,4-diaminoanthraquinone-2,3-disulphonic acid consisting of reacting 1,4-diamino-2,3-dichloroanthraquinone with boric acid in the absence of any additional condensation agent, and treating the reaction product with an alkali metal sulphite.

4,279,826

23,25-DIHYDROXYVITAMIN D_3

Hector F. DeLuca; Heinrich K. Schnoes; Yoko Tanaka, and Joseph K. Wichmann, all of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Sep. 22, 1980, Ser. No. 189,481

Int. Cl.³ C07J *9/00*

U.S. Cl. 260—397.2 **1 Claim**

1. 23,25-dihydroxyvitamin D_3.

4,279,827

PROCESS FOR THE PREPARATION OF A β-SITOSTEROL CONCENTRATE CONTAINING LESS THAN 5% BY WEIGHT OF α-SITOSTEROL

Keijo A. Ukkonen, and Esa J. Simpura, both of Lappeenranta, Finland, assignors to Oy Kaukas AB, Lappeenranta, Finland

Filed Oct. 23, 1979, Ser. No. 87,517

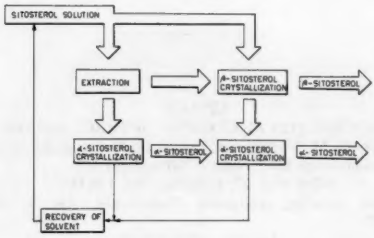
Claims priority, application Finland, Oct. 27, 1978, 783279

Int. Cl.³ C07J *9/00*

U.S. Cl. 260—397.25 **4 Claims**

1. A process for the removal of α-sitosterol from sitosterol concentrates based on plants to obtain a β-sitosterol concentrate containing less than 5% by weight of α-sitosterol, comprising dissolving a sitosterol concentrate containing β-sitosterol and more than 5% by weight of a α-sitosterol, in a solvent mixture consisting essentially of

30–90 parts by weight of hexane
5–30 parts by weight of xylene
2–10 parts by weight of ethyl acetate
0–2 parts by weight of water



0–2 parts by weight of acetic acid
0–2 parts by weight of methanol
0–5 parts by weight of acetone, and

cooling the resultant solution to about 5° C. thereby to separate by crystallization from said resultant solution β-sitosterol containing less than 5% by weight of α-sitosterol.

4,279,828

PROCESS FOR SEPARATING 3-HYDROXY STEROIDS OR STEROLS FROM MIXTURES SUCH AS LIPIDS

Charles H. Foster, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 13, 1980, Ser. No. 159,095

Int. Cl.³ C07J *9/00*

U.S. Cl. 260—397.25 **9 Claims**

1. A process for separating 3-hydroxy steroids from sterol-lipid containing mixtures comprising combining a solution of the sterol-containing mixture in an aliphatic solvent with a slurry or solution of $CaCl_2$ in an aliphatic solvent and agitating said combined solutions for a sufficient time to provide sterol $-CaCl_2$ complexes, removing said aliphatic solvent, washing said residue with a hydrocarbon solvent and recovering said sterol $-CaCl_2$ complex.

4,279,829

METAL COMPLEX CATALYSTS

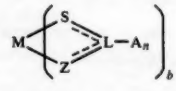
Louis J. Velenyi, Lyndhurst; Christos Paparizos, Cleveland, and Serge R. Dolhyj, Parma, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Division of Ser. No. 973,070, Dec. 26, 1978. This application Oct. 31, 1979, Ser. No. 90,161

Int. Cl.³ C07F *3/06*

U.S. Cl. 260—429.9 **12 Claims**

1. A catalyst represented by the formula:



wherein

M is a positively charged metal or metal compound;
Z is S, O, P, S—P or S—S;
L is C, P or N;
A is one or more of the groups consisting of halogen; hydrogen; C_{1-30} alkoxy; N—R_2 wherein R is selected from the group consisting of H, C_{1-30} alkyl and phenyl or phenyl substituted with one or more C_{1-20} alkyl and C_{1-20} alkoxy; and C_{1-30} hydrocarbon groups or C_{1-30} hydrocarbon

groups substituted with one or more substituents selected from the group consisting of halogen, C_{1-12} hydroxy groups, C_{1-12} acid groups, C_{1-12} aldehyde groups, C_{1-12} ketone groups, and C_{1-10} nitrile groups; and

wherein

n is 1 or 2; and

b is 1, 2 or 3;

with the proviso that when Z is S or O, then A is one or more of the group consisting of halogen; hydrogen; NH_2; and C_{1-30} hydrocarbon groups or C_{1-30} hydrocarbon groups substituted with one or more substituents selected from the group consisting of halogen, C_{1-12} hydroxy groups, C_{1-12} acid groups, C_{1-12} aldehyde groups, C_{1-12} ketone groups, and C_{1-10} nitrile groups.

4,279,830
CONVERSION OF SYNTHESIS GAS TO HYDROCARBON MIXTURES UTILIZING DUAL REACTORS

Werner O. Haag, Lawrenceville, and Tracy J. Huang, Trenton, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 826,487, Aug. 22, 1977, Pat. No. 4,159,995. This application Jun. 1, 1979, Ser. No. 44,872

The portion of the term of this patent subsequent to Jul. 3, 1996, has been disclaimed.

Int. Cl.³ C07L *1/04*

U.S. Cl. 518—700 **11 Claims**

1. In a process for converting syngas to carbon compounds comprising oxygenates and hydrocarbon products wherein syngas is contacted with an iron-containing Fischer-Tropsch catalyst at a temperature with the range of 400° to 600° F. and a pressure within the range of 1–1500 psig so as to achieve high conversion of said syngas to substantial amounts of C_3+ carbon compounds comprising no more than 20% methane plus ethane, and all or a portion of the product of said syngas conversion is passed in contact with an acidic crystalline zeolite having a pore dimension greater than 5 Angstroms, a silica-to-alumina ratio of at least 12, and a constraint index within the range of 1–12 at a temperature of 530°–850° F., a pressure from about 1 atmosphere to about 800 psig, and at a space velocity of from about 0.2 to 30 WHSV so as to promote the formation of gasoline and distillate materials; the improvement which comprises increasing the rate of syngas conversion by maintaining a H_2/CO ratio in the range of 0.5 to 1 and achieving an overall syngas conversion of greater than 60%.

4,279,831
2-CHLORO-2-ALKYL SUBSTITUTED ASYMMETRICAL DIACYL PEROXIDES

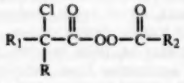
Reidar Halle, Novato; David Peterson, Hercules, and Roger N. Lewis, Martinez, all of Calif., assignors to Argus Chemical Corporation, Brooklyn, N.Y.

Filed Aug. 10, 1979, Ser. No. 65,410

Int. Cl.³ C07C *179/14*

U.S. Cl. 260—453 RZ **10 Claims**

1. An organic peroxide of the formula:



where R and R_1 are alkyl which together contain up to about 10 carbon atoms, and R_2 is an alkyl group having up to about 18 carbon atoms.

4,279,832
PROCESS FOR THE PRODUCTION OF ISOCYANATOARYL SULFONIC ACIDS

Dieter Dieterich, Leverkusen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 23, 1980, Ser. No. 171,562

Claims priority, application Fed. Rep. of Germany, Aug. 8, 1979, 2932094

Int. Cl.³ C07C *118/00, 143/24;* C07D *229/00*

U.S. Cl. 260—453 P **7 Claims**

1. A process for the production of isocyanatoaryl sulfonic acids comprising:

(a) reacting a mixture of reaction components comprising:

(i) aromatic carbamic acid chlorides,

(ii) sulfur trioxide or chlorosulfonic acid, at a temperature of from −10° C. to 140° C. to produce sulfonic acids with carbamic acid chloride groups;

(b) converting said carbamic acid chloride groups into isocyanate groups by heating to a temperature of 40° C. to 180° C. with the evolution of hydrogen chloride; and optionally,

(c) neutralizing at least some of the sulfonic acid groups present with an inorganic or organic base forming sulfonate groups.

4,279,833
ACRYLIC MONOMERS CONTAINING CARBAMATE FUNCTIONALITY

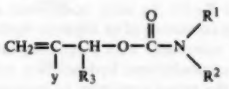
Billy M. Culbertson, Worthington, and Larry K. Post, Columbus, both of Ohio, assignors to Ashland Chemical Company, Columbus, Ohio

Filed Dec. 17, 1979, Ser. No. 103,971

Int. Cl.³ C07C *125/065, 125/073*

U.S. Cl. 260—464 **11 Claims**

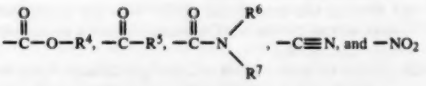
1. A compound having the formula:



whereiN R^1 and R^2 are selected from the group consisting of hydrogen, alkyl, cycloalkyl, dicycloalkyl, aryl, aralkyl, and alkaryl; and

wherein R^3 is selected from the group consisting of: alkyl, alkaryl, aralkyl and aryl; and

wherein y is selected from the group consisting of:



wherein R^4, R^5, R^6 and R^7 are selected from the group consisting of: alkyl, cycloalkyl, aryl, aralkyl, alkaryl, halogen substituted aryl and alkoxyaryl.

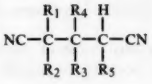
4,279,834

METHOD FOR SYNTHESIZING DINITRILES, PRODUCTS OBTAINED THEREBY AND THEIR DERIVATIVES

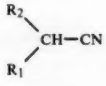
Aldo Prevedello, San Donato Milanese; Maurizio Brunelli, Milan, and Edoardo Platone, Asti, all of Italy, assignors to Anic S.p.A., Palermo, Italy

Continuation of Ser. No. 899,797, Apr. 25, 1978, abandoned. This application Jan. 17, 1980, Ser. No. 113,093
Claims priority, application Italy, Apr. 26, 1977, 22806 A/77; Feb. 24, 1978, 20560 A/78
Int. Cl.[3] C07C *120/00, 121/46, 121/20, 121/26*
U.S. Cl. 260—464 7 Claims

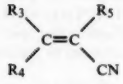
1. A method of preparing a dinitrile compound represented by the formula:



when a saturated nitrile represented by the formula:



is reacted with an unsaturated nitrile represented by the formula:



and wherein R_1 and R_2 are the same or different and are selected from the group consisting of hydrogen, an aliphatic hydrocarbon radical which may be substituted with a cycloaliphatic hydrocarbon radical and a cycloaliphatic hydrocarbon radical, R_3 and R_4 are the same or different and are selected from the group consisting of an aliphatic hydrocarbon radical which may be substituted with a cycloaliphatic hydrocarbon radical and a cycloaliphatic hydrocarbon radical, and R_5 is selected from the group consisting of hydrogen, an aliphatic hydrocarbon radical, cyclopropyl or phenyl, said method comprising

(a) contacting said saturated nitrile with a strong base in an amount from 1 to 5 mols of strong base per mol of said saturated nitrile in the presence of a solvent selected from the group consisting of ammonia, ethylether, tetrahydrofuran, and hexane to form a reaction mixture whereby said saturated nitrile is ionized,

(b) reacting said unsaturated nitrile with said ionized saturated nitrile for one to 60 minutes to form a second reaction mixture, and

(c) adding an acid or a salt of a strong acid and a weak base to said second reaction mixture to thereby stop the reaction,

and wherein said method is conducted at a temperature of from −80° C. to −10° C.

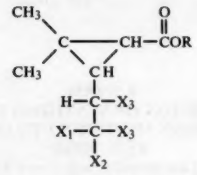
4,279,835

NOVEL CYCLOPROPANE CARBOXYLIC ACID ESTERS

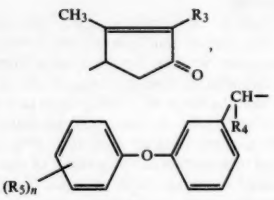
Jacques Martel, Bondy; Jean Tessier, Vincennes, and Jean-Pierre Demoute, Montreuil-sous-bois, all of France, assignors to Roussel Uclaf, Paris, France

Continuation-in-part of Ser. No. 834,659, Sep. 19, 1977, abandoned, and Ser. No. 5,375, Jan. 22, 1979, abandoned. This application May 14, 1979, Ser. No. 38,728
Claims priority, application France, Sep. 21, 1976, 76-28279; Jul. 19, 1977, 77 22078; Mar. 17, 1978, 78 07780
Int. Cl.[3] C07C *69/74;* A01N *53/00*
U.S. Cl. 260—465 D 16 Claims

1. A compound of the formula



wherein X_1 is selected from the group consisting of hydrogen, fluorine, chlorine and bromine, X_2 is selected from the group consisting of fluorine, chlorine and bromine, X_3 is selected from the group consisting of chlorine, bromine and iodine and R is selected from the group consisting of



and benzyl optionally substituted with at least one member of the group consisting of alkyl of 1 to 4 carbon atoms, alkenyl of 2 to 6 carbon atoms, alkenyloxy of 2 to 6 carbon atoms, alkadienyl of 4 to 8 carbon atoms, methylenedioxy, benzyl and halogens, R_3 is an aliphatic of 2 to 6 carbon atoms having at least one double bond, R_4 is selected from the group consisting of hydrogen, —CN and —C|CH, R_5 is selected from the group consisting of chlorine and methyl, n is 0,1 or 2.

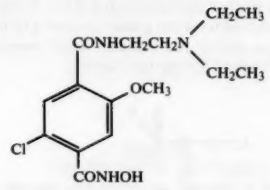
4,279,836

HYDROXAMIC ACID DERIVATIVE AND METHOD OF PREPARING METOCLOPRAMIDE USING SAME

Joji Nishikido, Fuji; Yohei Fukuoka, Kurashiki, and Nobuhiro Tamura, Chigasaki, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

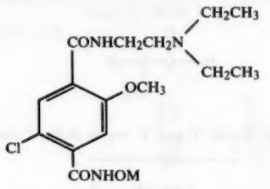
Filed May 14, 1979, Ser. No. 38,696
Claims priority, application Japan, May 12, 1978, 53/55675
Int. Cl.[3] C07C *83/02, 101/02, 103/26*
U.S. Cl. 260—500.5 H 19 Claims

1. 2-Chloro-4-N-(β-diethylaminoethyl)aminocarbonyl-5-methoxybenzhydroxamic acid of the formula (I),



(I)

or its metal salt of the formula (II),



(II)

wherein M is an alkali metal or an alkaline earth metal.

4,279,837

PROCESS FOR THE PREPARATION OF ALKALINE EARTH METAL SALTS OF ALKYL BENZENESULFONIC ACIDS

Werner Wellbrock, Bad Soden am Taunus, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 28, 1980, Ser. No. 125,462

Claims priority, application Fed. Rep. of Germany, Mar. 2, 1979, 2908265

Int. Cl.³ C07C *143/24*

U.S. Cl. 260—505 N **2 Claims**

1. Process for the preparation of alkaline earth metal salts of alkyl benzene sulfonic acids by the neutralization of alkyl benzenesulfonic acids, which comprises neutralizing the alkyl benzene sulfonic acid with the necessary amount of a basic alkaline earth metal compound in an inert organic solvent and in the presence of 1 to 10% by weight of an oxalkylate, calculated on the weight of the alkyl benzene sulfonic acid.

4,279,838

PROCESS FOR THE PREPARATION OF AMINOARYL THIOPHOSPHATES AND AMINOARYL PHOSPHATES

Ryuichi Yamamoto, Shirogane, and Masaaki Torisu, Suwa, both of Japan, assignors to Mitsui Toatsu Chemicals Inc., Tokyo, Japan

Filed Feb. 12, 1980, Ser. No. 120,863

Claims priority, application Japan, Apr. 16, 1979, 54-45315; May 17, 1979, 54-59694; Aug. 31, 1979, 54-110263

Int. Cl.³ C07F *9/09, 9/165*

U.S. Cl. 260—968 **15 Claims**

1. A process for the preparation of an ester compound selected from the group consisting of tris(aminoaryl)thiophosphates and tris(aminoaryl)phosphates which comprises the steps of

(a) reacting an N-acetylaminophenol with phosphorus oxychloride or phosphorus thiochloride in a molar ratio of 2.5 to 3.5:1, in the presence of an alkali metal hydroxide or carbonate, water and an inert organic solvent selected from the group consisting of aliphatic ketones and ethers, at a temperature of 80° C. or below to form tris-(acetylaminoaryl)thiophosphate or tris(acetylaminoaryl)-phosphate; and

(b) hydrolyzing said tris(N-acetylaminoaryl)thiophosphate or tris(N-acetylaminoaryl)phosphate by heating it without separation treatment at a temperature of from 50° to 100° C. in an aqueous solution of a mineral acid having a concentration of from 5 to 30% by weight to form said ester compound.

4,279,839

PROCESSES FOR MAKING PHOSPHORUS CONTAINING AMINOTHIOCARBAMOYL HALIDES

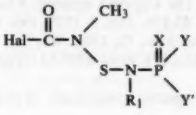
Stephen J. Nelson, Comstock Township, Kalamazoo County, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 43,276, Jun. 1, 1979, Pat. No. 4,234,521. This application Mar. 21, 1980, Ser. No. 132,639

Int. Cl.³ C07F *9/24;* C07C *125/03*

U.S. Cl. 260—968 **37 Claims**

1. A process for preparing compounds having the formula:



II

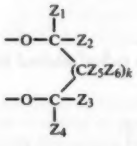
wherein Hal is selected from the group consisting of fluoro, and chloro; R_1 is selected from the group consisting of loweralkyl, phenyl, substituted phenyl, phenyl loweralkyl, and cycloalkyl; X is oxygen or sulfur; Y and Y' are the same or different and are selected from the group consisting of:

Y_1 and Y_1' I_1

and

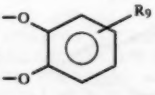
Y and Y'

taken together to form a radical selected from the group consisting of:



I'

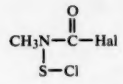
I''



I'''

wherein Y_1 and Y_1' are selected from the group consisting of lower-alkyl, lower-alkoxy, lower-alkylthio, cycloalkyl, phenyl, substituted phenyl, phenoxy, substituted phenoxy, thiophenoxy, and substituted thiophenoxy; Z_1 through Z_6 are the same or different and are selected from the group consisting of hydrogen, methyl and ethyl; and k is 0 or 1, p is three or four and R_9 is selected from the group consisting of hydrogen, lower alkyl, lower alkoxy and halogen; which comprises:

reacting N-chlorothio-N-methylcarbamoyl fluoride having the formula:



IV

and a phosphoramide having the formula:

wherein Hal, R_1, X, Y and Y′ are the same as above.

4,279,840

PROCESSES FOR MAKING PHOSPHORUS CONTAINING AMINOTHIOCARBAMOYL HALIDES

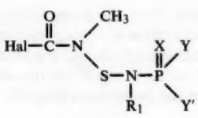
Stephen J. Nelson, Comstock Township, Kalamazoo County, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 43,276, Jun. 1, 1979, Pat. No. 4,234,521. This application Mar. 21, 1980, Ser. No. 132,640

Int. Cl.³ C07F *9/24*; C07C *125/03*

U.S. Cl. 260—968 **37 Claims**

1. A process for preparing compounds having the formula



II

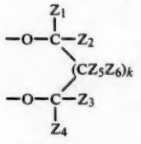
wherein Hal is selected from the group consisting of fluoro and chloro; R_1 is selected from the group consisting of loweralkyl, phenyl, substituted phenyl, phenyl lower-alkyl, and cycloalkyl; X is oxygen or sulfur; Y and Y′ are the same or different and are selected from the group consisting of:

Y_1 and Y_1' I_1

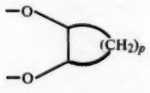
and

Y and Y′

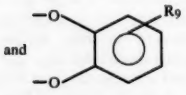
taken together to form a radical selected from the group consisting of:



I′



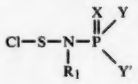
I″



I‴

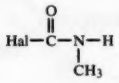
wherein Y_1 and Y_1' are selected from the group consisting of lower-alkyl, lower-alkoxy, lower-alkylthio, cycloalkyl, phenyl, substituted phenyl, phenoxy, substituted phenoxy, thiophenoxy, and substituted thiophenoxy; Z_1 through Z_6 are the same or different and are selected from the group consisting of hydrogen, methyl and ethyl; and k is 0 or 1, p is three or four and R_9 is selected from the group consisting of hydrogen, lower alkyl, lower alkoxy and halogen; which comprises:

reacting a compound having the formula:



III

wherein R_1, X, Y and Y′ are the same as above, with N-methylcarbamoyl halide having the formula:



wherein Hal, R_1, X, Y and Y′ are as defined above.

4,279,841

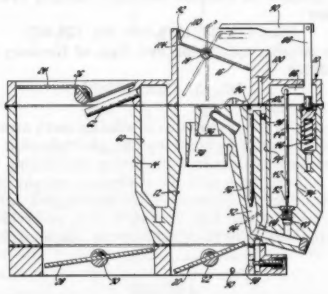
CARBURETOR WITH IMPROVED CHOKE MECHANISM

Ernest R. Stettner, Spencerport, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 9, 1979, Ser. No. 65,133

Int. Cl.³ F02M *7/20*

U.S. Cl. 261—23 A **5 Claims**



1. A carburetor comprising an induction passage, a fuel passage extending to a fuel nozzle opening into said induction passage, a metering apparatus movable between a lean position restricting flow through said fuel passage and a rich position permitting increased flow through said fuel passage, and a choke mechanism including a choke plate in said induction passage upstream of said nozzle and movable from a wide open position for decreasing the pressure adjacent said nozzle and thus effecting increased fuel flow from said nozzle, wherein said choke mechanism includes a driver mechanically connected to said choke plate and operable both in a cold enrichment region and in a closed loop region for moving said choke plate from its wide open position, and wherein said choke mechanism further includes a stop member physically engaged by said metering apparatus for limiting movement of said metering apparatus toward said rich position when said driver is operating in said closed loop region but not when said driver is operating in said cold enrichment region, whereby said driver may be operated in said closed loop region for both effecting increased fuel flow from said nozzle and limiting movement of said metering apparatus toward said rich position and in said cold enrichment region for effecting increased fuel

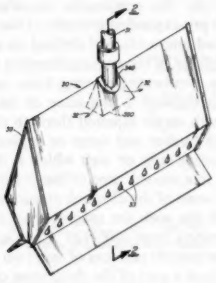
flow from said nozzle without limiting movement of said metering apparatus toward said rich position.

4,279,842

AIR DIFFUSER ASSEMBLY

Robert E. Belveal, New Iberia, La., assignor to Houston Systems Manufacturing Co., Inc., Houston, Tex.

Continuation-in-part of Ser. No. 60,844, Jul. 26, 1979. This application Jul. 17, 1980, Ser. No. 169,620
Int. Cl.³ B01F *5/06*
U.S. Cl. 261—124 **9 Claims**



1. An air diffuser assembly comprising:

a. an aerator body comprising a plurality of side walls connected to form an enclosure, and at least a pair of intersecting angularly oriented side walls forming an air container envelope for retaining an air volume therewithin;

b. an air inlet adapted to convey air into said air body at said air container envelope;

c. a plurality of tear-shaped openings being provided in said body below said air container envelope allowing air to discharge from said body through said tear-shaped openings, each of said tear-shaped openings providing an upper pointed portion which minimizes bubble-size of air discharged through said openings, and a lower circular portion communicating with said upper pointed portion, forming together said tear-shaped opening.

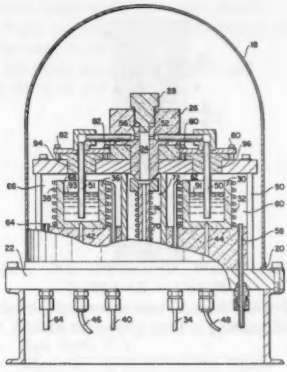
4,279,843

PROCESS FOR MAKING UNIFORM SIZE PARTICLES

Nam P. Suh, Sudbury, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation-in-part of Ser. No. 78,320, Sep. 24, 1979, abandoned. This application Mar. 26, 1980, Ser. No. 134,181
Int. Cl.³ B01J *2/06*
U.S. Cl. 264—11 **7 Claims**

1. The process for forming solid particles from at least one selected from at least two liquid streams, each of said streams selected from the group consisting of a metal, a metal alloy and a ceramic which comprises impinging said liquid streams upon each other to form a turbulent mixture having small eddies, each of said liquid streams having a Reynolds number based on the nozzle diameter of at least about 50, regulating the temperature and flow rates of each of said streams to solidify at least one component of the turbulent mixture before substantial coalescence of the components of said streams while at least one component of said turbulent mixture remaining liquid and



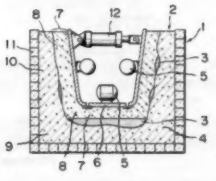
removing said solidified component as solid particles from the component which remains as a liquid.

4,279,844

METHOD FOR THE REPAIR OF RUNNER FOR MOLTEN METAL

Hiroyuki Danjyo, Bizen, and Masashi Mori, Okayama, both of Japan, assignors to Shinagawa Refractories Co., Ltd., Japan

Filed Feb. 15, 1979, Ser. No. 12,444
Claims priority, application Japan, Jun. 23, 1978, 53-75483
Int. Cl.³ B28B *1/08*
U.S. Cl. 264—30 **3 Claims**



1. A method for the repair of runner lining for molten metal comprising the steps of setting an inner molding former provided with a vibrating mechanism, in a repairing runner for molten metal, filling up under vibration the void space formed between the former and the existing lining, with a runner material containing less than 1.0 percent by weight of water, and curing the filled-up material under heating.

4,279,845

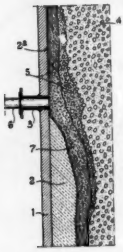
PROCESS FOR COATING THE INNER WALL OF A FURNACE OR LIKE APPARATUS

Pierre Maisonnave, Oye Plage, France, assignor to Union Siderurgique du Nord et De L'est De La France (USINOR), Paris, France

Filed Oct. 10, 1979, Ser. No. 83,275
Claims priority, application France, Oct. 19, 1978, 78 29780
Int. Cl.³ F27D *1/16*
U.S. Cl. 264—30 **5 Claims**

1. A process for the maintenance, repairing or reconstitution of the refractory lining of a wall of a furnace or like apparatus by means of a protecting product, comprising first injecting through at least one orifice in the furnace wall a first product adapted to constitute an intermediate layer between a charge contained in the furnace and the protecting product, and then

injecting through said orifice, after a sufficient period of time, the protecting product proper between said intermediate layer



and the wall of the furnace, said protecting product adhering to the wall and setting to form a repaired surface.

4,279,846

PROCESS FOR PREPARING SEMIPERMEABLE MEMBRANE HAVING SELECTIVE PERMEABILITY

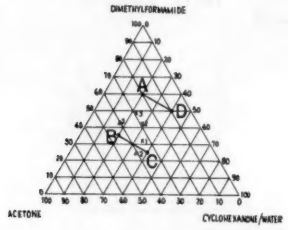
Kiyoshi Ishii; Zenjiro Honda, and Hitoshi Tsugaya, all of Oimachi, Japan, assignors to Daicel Chemical Industries, Ltd., Osaka, Japan

Filed Mar. 31, 1980, Ser. No. 135,590

Claims priority, application Japan, Apr. 6, 1979, 54/41654

Int. Cl.³ B29D *27/00;* **B29H** *7/20;* **B29D** *7/02;* **B01D** *13/00*

U.S. Cl. 264—41 **2 Claims**



1. In a process for preparing a semipermeable membrane suitable for use in an artificial kidney of the filtration type for purifying blood, which comprises the steps of casting a film of a solution of cellulose acetate dissolved in a solvent which solution also contains a swelling agent, then partially evaporating the solvent from the film, and then immersing the film in a non-solvent to gel the film and to remove the solvent from the film, whereby to form a semipermeable membrane, the improvement which comprises:

said cellulose acetate has an acetylation degree of from 52 to 56%, said solvent consists essentially of a mixture of dimethylformamide and acetone, said swelling agent consists essentially of a mixture of cyclohexanone and water in which the weight ratio of cyclohexanone to water is from 0.8 to 1.3, and wherein the weight ratio of dimethylformamide/acetone/swelling agent in said solution lies within the area bounded by points A, B, C and D in the attached drawing, wherein the coordinates of points A, B, C and D, expressed in terms of weight ratio of dimethylformamide/acetone/swelling agent, are as follows:

point A, 60/20/20

point B, 35/45/20

point C, 25/35/40

point D, 50/10/40.

4,279,847

METHOD FOR CONTINUOUS MANUFACTURE OF FOAMED PLASTIC

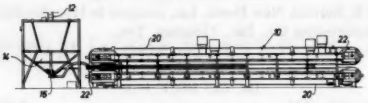
Alf G. Assarsson, and Heikki Korpela, both of Helsingborg, Sweden, assignors to Gulfeber, A.B., Sweden

Filed Jul. 9, 1979, Ser. No. 56,143

Claims priority, application Sweden, Jun. 1, 1979, 7904856

Int. Cl.³ B29D *27/00*

U.S. Cl. 264—51 **3 Claims**



1. A method for the continuous manufacture of foamed plastic, in which pre-expanded granules of thermoplastic material are introduced into a channel defined on at least two sides by the inside surfaces of the two confronting inner sections of a pair of endless, perforated moving belts, and in which the granules, passing through a first zone of the channel, are in direct contact with steam injected through the belts, and are caused to expand further and sinter or agglomerate to form a coherent, continuous strip or web which is then treated by a vacuum process in a second zone of the channel, and is finally cooled in a third zone of the channel, characterized in that two main surfaces of the web are subjected to the same forced, rapid cooling process from 100°–120° C. to approximately 70° C. by causing the outside surfaces of said two inner sections of the belts, for at least a part of the third zone of the channel, to be acted upon by a coolant of higher thermal capacity than air, said web thus being indirectly cooled by said coolant via the belts, the mixture of gases present under pressure in said web, being made to diffuse out of the thermoplastic material to reduce the positive pressure thereof to such an extent that the walls of its cells withstand further undesired expansion.

4,279,848

PROCESS FOR EXTRUDING AN OPEN-CELL FOAMED POLYOLEFIN FILTER

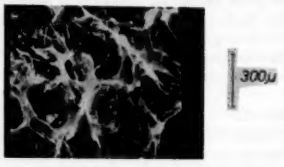
Samuel Baxter, Penhow, England, and Pushpkumar D. Changani, Glasgow, Scotland, assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 643,287, Dec. 22, 1975, Pat. No. 4,232,130, which is a division of Ser. No. 486,549, Jul. 8, 1974, Pat. No. 3,939,849, which is a continuation of Ser. No. 193,710, Oct. 29, 1971, abandoned. This application Feb. 11, 1980, Ser. No. 120,447

Claims priority, application United Kingdom, Nov. 18, 1970, 54806/70; Apr. 16, 1971, 9646/71

Int. Cl.³ B29D *27/00*

U.S. Cl. 264—53 **5 Claims**



1. In a process for the extrusion through a metal die of a high density polyethylene resin having a melt temperature between 130° C. and 150° C. or a polypropylene resin having a melt temperature of between 160° C. and 180° C., wherein each resin contains a volatile blowing agent in an amount less than 0.2 moles per 100 grams of the final extruded resin, the im-

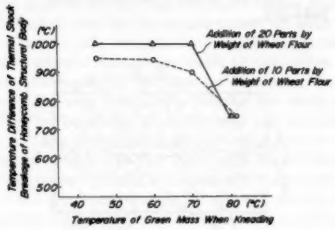
provement which comprises maintaining the temperature of the die within 5 millimeters of the metal-resin interface at a temperature of between 120° C. and 136° C. where the resin is polyethylene and between 155° C. and 165° C. where the resin is polypropylene.

4,279,849

METHOD FOR PRODUCING CORDIERITE CERAMIC HONEYCOMB STRUCTURAL BODIES

Yutaka Ogawa, Nagoya; Toshio Takehara, Kagamihara, and Seiichi Asami, Okazaki, all of Japan, assignors to NGK Insulators, Inc., Nagoya, Japan

Filed Jan. 15, 1980, Ser. No. 112,325
Claims priority, application Japan, Jan. 25, 1979, 54/7587
Int. Cl.³ C04B *35/64*
U.S. Cl. 264—63 **2 Claims**



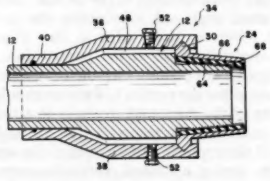
1. A method for producing cordierite ceramic honeycomb structural bodies having an excellent thermal shock resistance, which comprises adding a binder, water and 1 to 30 parts by weight of ungelatinized starch powder to 100 parts by weight of ceramic starting material to crystallize cordierite by firing, kneading the resulting mixture at a temperature of not higher than 70° C., extruding the mixture into a honeycomb structural body, and drying and firing the honeycomb structural body.

4,279,850

DRILL PIPE TOOL JOINT PROTECTOR

Paul E. Lynch, 721 Milky Way, Garland, Tex. 75040

Filed May 15, 1979, Ser. No. 39,127
Int. Cl.³ B29D *3/00*
U.S. Cl. 264—135 **6 Claims**



1. A method of applying a protective shield to a male tool joint of a drill pipe having tapered threads, comprising;

positioning a centering hub on the male end of the tool joint, the hub having a tubular portion engaging the tool joint external threads, and having an enlarged diameter centering portion thereof of larger diameter than the outside diameter of the tool joint providing an outer enlarged diameter circumferential centering surface;

positioning a sectioned mold around the portion of the tool joint to receive the protective shield, the mold having a rearward end engaging the tool joint and a forward end having an enlarged internal diameter circumferential recess therein which receives the hub circumferential centering surface, the mold having an opening therein, the interior diameter of the mold being greater than the exterior diameter of the tool joint in the area to receive the protective shield providing an annular cavity defining the preselected shape of the protective shield;

injecting liquid material through the opening into the mold to fill the annular cavity;

allowing the liquid material to solidify; and

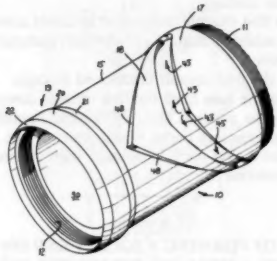
removing the mold and hub.

4,279,851

METHOD AND APPARATUS FOR EXTRUDING TUBULAR JACKETS

Herbert A. Lord, Mercer County, N.J., and Randy G. Schneider, Gwinnett County, Ga., assignors to Western Electric Company, Inc., New York, N.Y.

Filed Nov. 1, 1979, Ser. No. 90,173
Int. Cl.³ B29F *3/10*
U.S. Cl. 264—174 **6 Claims**



1. A method of extruding a plastic jacket onto a cable being advanced through an extruder crosshead which comprises the steps of:

(a) forcing a stream of plastic fluid into the crosshead;

(b) bifurcating the stream of plastic fluid into two branch streams:

(c) channeling the branch streams to two diametrically opposite locations about the cable where each stream is shaped with a prespread width;

(d) directing each branch stream from the locations axially along the cable while spreading each branch stream at an axial to lateral spread ratio of between approximately 1:2 tangent 30° and 1:2 tangent 40° into a confluent stream about the cable of tubular shape having a circumference of between approximately 22 and 50 times that of the prespread width of each branch stream at said locations; and

(e) extruding the confluent stream onto the cable.

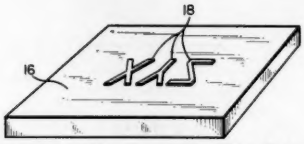
4. A diverter tube mountable within an interior cylindrical wall of an extruder crosshead for forming a stream of plastic fluid introduced into the crosshead through an entrance port in the crosshead interior wall into a tubular shape of uniform wall thickness and with the exterior surface of said diverted tube having raised lands defining first channel means for channeling plastic fluid from the entrance port to two diametrically opposite channel orifices of the same circumferential width, and wherein said raised lands further define second channel means for spreading the plastic fluid out from said orifices at an axial to lateral spread ratio of between approximately 1:2 tangent 30° and 1:2 tangent 40° along the exterior surface of the diverter tube into a recombined stream of tubular configuration having a circumference of between approximately 22 and 50 times the complete prespread width of each channel orifice.

4,279,852

INDICIA PRODUCING METHOD

Rudolph H. Engelmann, Box 687, Willmar, Minn. 56201

Filed Mar. 6, 1980, Ser. No. 127,917
Int. Cl.³ B29C *1/02*
U.S. Cl. 264—227 **8 Claims**



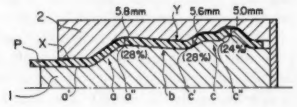
1. A method of producing an indicia transferring surface comprising:
providing a base with a surface having a curing inhibitor coating thereon;
affixing an inert material in the shape of indicia to the curing inhibitor coating;
placing a first curable compound in direct contact with the curing inhibitor coating and the inert material in the shape of indicia;
allowing the first curable compound to cure;
separating the base from the first curable compound; and
removing the uncured layer of the first curable compound thereby exposing cured raised areas of the first curable compound that were in contact with the indicia shaped inert material.

4,279,853

METHOD OF FORMING A SOCKET END ON A PLASTIC PIPE AND A MOLDING DEVICE FOR USE OF THE METHOD

Ryozo Ohta; Tadao Yoshizawa; Masayuki Sakaguchi; Yoshiaki Hara; Junsuke Kyomen; Ryuichi Yoneda, and Hidekazu Enomoto, all of Ishizukita, Japan, assignors to Kubota Ltd., Osaka, Japan

Filed Sep. 28, 1979, Ser. No. 80,035
Claims priority, application Japan, Oct. 3, 1978, 53-122326; Nov. 28, 1978, 53-147402; Mar. 5, 1979, 54-25899
Int. Cl.³ B29D *23/00*
U.S. Cl. 264—230 **3 Claims**



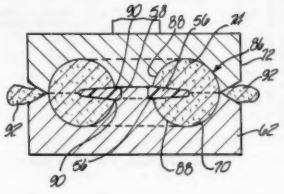
1. A method of processing the end of a plastic pipe to form a pipe end socket wherein a processing and molding space, through which a softened end wall of sad plastic pipe is passed, includes a first outwardly slanted portion for enlarging the radius of the pipe as the pipe end wall is advanced, a second outwardly slanted portion arranged behind the first outwardly slanted portion and enlarging the radius of the pipe as the pipe end wall is advanced, and an inwardly slanted portion extending from the top of said first outwardly slanted portion to a valley portion of said second outwardly slanted portion and shortening the radius of the pipe as the pipe end wall is advanced, which comprises:
enlarging the softened pipe end in the circumferential direction thereof at the first outwardly slanted portion,
pushing said pipe end in the axial direction thereof,
shrinking the softened pipe end after passing through the top of the first outwardly slanted portion in the circumferential direction thereof at the inwardly slanted portion,
relatively increasing the softened pipe wall in the radial direction thereof while the front end of the pipe passes through the valley portion of the second outwardly slanted portion and reaches the top thereof, and
thickening the softened pipe wall in the processing and molding space by pushing pressure exerted on the pipe end after it passes through the top of the second outwardly slanted portion and reaches an end portion of the molding space.

4,279,854

METHOD AND APPARATUS FOR FORMING SOAP BARS WITH AN EMBEDDED INSERT

Henry Blaszkowski, P.O. Box 114, Southfield, Mich. 48075

Filed Jul. 25, 1979, Ser. No. 60,725
Int. Cl.³ B29C *6/02*; B29D *3/00*
U.S. Cl. 264—275 **2 Claims**



1. The method of making a soap bar having a pair of opposed faces and a relatively rigid, centrally apertured insert embedded therein in a plane spaced between said opposed faces, said insert having a lateral dimension substantially greater than its central aperture and substantially less than the lateral dimension of the soap bar so that the periphery of the insert is spaced substantially inwardly from the periphery of the soap bar, said insert having opposed, laterally extending faces and being relatively thin as compared to its lateral dimension, said method comprising the steps of providing a die having a pair of vertically separable sections each having a cavity therein which is relatively shallow as compared to its lateral dimension, both cavities being open at the parting face of the die and having corresponding dimensions at said parting face, the parting face portion of at least one die section surrounding the cavity therein being inclined to the central vertical axis of the die at an acute angle and intersecting the periphery of the cavity in a relatively sharp edge so that when the two die sections completely close at the parting face, said inclined surrounding face cooperates with the cavity-surrounding face portion of the other die section to form an annular recess at the parting faces of the die which diverges in a radially outward direction, each cavity corresponding in size and shape to generally one of the opposite half sections of the soap bar, each of said cavities having a central, vertically extending pedestal fixed therein which terminates in a free end portion having a flat end face spaced vertically from the base of the respective cavity, said pedestals having a vertical dimension such that the said free end faces advance into substantial coplanar abutting relation when the die is closed, the free end portion of one of said pedestals corresponding in size with the insert aperture and having an enlarged concentric annular shoulder spaced axially from its free end face a distance substantially equal to the thickness of the insert at the annular portion thereof surrounding the aperture therein, said shoulder extending in a plane substantially perpendicular to the vertical axis of the pedestal, the end face of the other pedestal being sized and shaped to correspond generally with the outer periphery of said shoulder, separating the die sections so that the cavities are spaced apart vertically in axially opposed relation, positioning the insert over the free end of said one pedestal and seating it

on said shoulder so that it extends in a generally horizontal plane with the free end portion of the pedestal received within the aperture of the insert with a relatively close fit so as to support the insert in a fixed, stable position on said one pedestal with its periphery spaced laterally inwardly from the surrounding wall of the cavity and vertically from the underlying wall portion of the cavity, placing a pressure deformable soap blank having a volume greater than the cavities between the cavity of the other die section and the face of the insert adjacent thereto, progressively closing the die sections so that the soap blank applies an axial force to the insert which maintains it firmly seated on said shoulder and during initial closing movement of the die the insert cooperates with the wall of the other cavity to cause the soap in the blank to flow laterally outwardly over the adjacent face of the insert, around the periphery of the insert and axially into the cavity of said one die section and simultaneously said end faces causing the soap therebetween to be displaced radially outwardly as they approach one another and, during continued closing movement, the cavity wall of said one die section causes the soap flowing therein to flow laterally inwardly toward said one pedestal and against the opposite face of the insert so that when the die completely closes said free end faces are in substantial coplanar engagement, the soap completely fills the die cavity and the excess soap flows radially outwardly into said annular recess whereby to form through the finished soap bar an opening which corresponds in size and shape with the portions of the pedestal on opposite sides of the insert and to leave an annular portion of the insert surrounding the aperture therein exposed at the opposite faces of the embedded insert, separating the die sections and thereafter removing the finished soap bar with the insert embedded therein from the free end portion of said one pedestal.

4,279,855

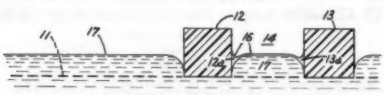
METHOD FOR THE CASTING OF ULTRATHIN POLYMER MEMBRANES

William J. Ward, III, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 356,514, May 2, 1973, abandoned. This application Dec. 26, 1974, Ser. No. 536,650

Int. Cl.³ B29D *7/02*

U.S. Cl. 264—298 **9 Claims**



1. In the process of casting a polymer film wherein a quantity of casting solution comprising polymer dissolved in a solvent system is deposited in a narrow, longitudinally-extending defined region on the surface of a liquid casting substrate, both the surface area and perimeter of said defined region are enlarged over the surface of said casting substrate in a direction transverse to the longitudinal direction of the original defined region and said quantity of casting solution is converted to a thin desolvated, solid polymer film covering an area much larger than the area of said defined region, the improvement comprising the steps of:

(a) employing a casting solution able to spontaneously spread over the liquid casting substrate, the polymer therein being insoluble in and not subject to swelling by the liquid of said casting substrate,

(b) controllably enlarging both the surface area and perimeter of said defined region over the surface of said casting substrate at such a rate relative to the volatility of the solvent system that only casting solution moves relative to said casting substrate during such enlargement, the solid polymer film being formed from the casting solution upon desolvation thereof and remaining stationary relative to said casting substrate and

(c) removing at least a portion of the solidified film from the surface of said casting substrate, said portion of solidified film being substantially free of applied tensile stress during the formation thereof and having a surface area of at least about one square foot.

4,279,856

METHOD AND AN APPARATUS FOR ASSEMBLING AND REMOVING A SEGMENTED TIRE MOLD CORE IN A TIRE MOLD

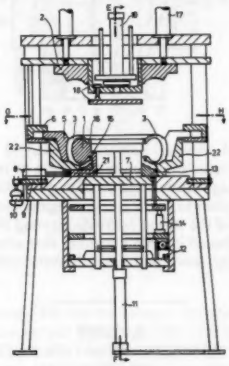
Paul Vente, Leverkusen; Dieter Seidenschnur, Neunkirchen-Seelscheid; Ulrich Knipp, Bergisch-Gladbach, and Anton Spenner, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 7, 1980, Ser. No. 110,043

Claims priority, application Fed. Rep. of Germany, Jan. 9, 1979, 2900565

Int. Cl.³ B29F *1/00;* **B29C** *5/00;* **B29H** *17/00*

U.S. Cl. 264—313 **4 Claims**



1. A method of assembling a tire mold core comprising:

(a) moving simultaneously approximately perpendicularly into and toward the center of the approximate tire plane containing the radii of the tire to be formed, a first unexpanded core segment group;

(b) radially expanding said first core segment group within the tire plane;

(c) arresting the expansion of said first core segment group by stopping the radial movement of the respective core segments of said group when the core segments are positioned so as to partially form a tire mold core; and

(d) repeating steps (a), (b) and (c) for each remaining unexpanded core segment group until the tire mold core is complete.

4,279,857

METHOD FOR CONTROLLING WALL THICKNESS IN EXTRUDED TUBULAR SYNTHETIC-RESIN BLANK

Harald Feuerherm, Alfred-Delp-Str. 1, 5210 Troisdorf, Fed. Rep. of Germany

Continuation of Ser. No. 854,748, Nov. 25, 1977, abandoned. This application Nov. 1, 1979, Ser. No. 90,442

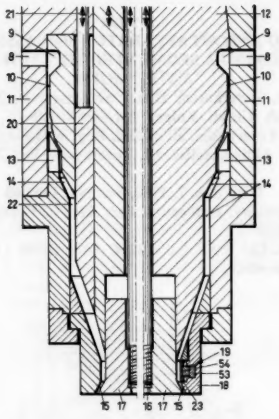
Claims priority, application Fed. Rep. of Germany, Nov. 27, 1976, 2654001

Int. Cl.³ B29C *17/07*

U.S. Cl. 264—541 **5 Claims**

1. In a method of producing containers of thermoplastic material wherein a solid strand of plastic synthetic resin is first formed into a tubular plastic strand and subsequently formed

into a container having a closed bottom by squeezing together the tubular strand and blow molding the container, the steps of periodically deforming said tubular strand to vary its thickness at axially spaced portions by passing said tubular strand through an axially stationary ring nozzle defining an annular passage of non-uniform width for the flow of the plastic synthetic resin therethrough; and periodically adjusting the cross



section of said annular passage to thereby asymmetrically deform said tubular strand over a portion of its circumference to impart to a high stretch region of said tubular strand a larger wall thickness than to a low stretch region thereof, so that the wall thickness of the strand portions forming the corners of the container is reduced in such a manner that after blow molding the container the latter will have a substantially uniform wall thickness.

4,279,858

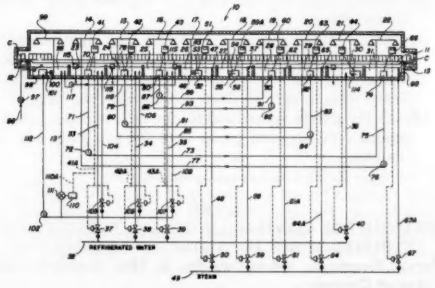
ENERGY CONSERVATION FOR PASTEURIZER APPARATUS

James K. Huling, Belleville, Ill., assignor to Barry-Wehmiller Company, St. Louis, Mo.

Filed Nov. 26, 1979, Ser. No. 97,511

Int. Cl.³ A61L *2/04, 2/24;* **A23C** *3/027;* **A23L** *3/04*

U.S. Cl. 422—25 **3 Claims**



1. A process for conserving the use of water in a pasteurizer for moving initially cold containers through successive preheating zones where the containers are raised in temperature and give up the cold temperature values and through precooling zones where the containers are lowered in temperature from a pasteurizing temperature by giving up heat, the process comprising: providing a cooled water containing compartment in advance of the movement of the initially cold containers into the preheating zones and showering the cooled water over the cold containers to acquire the cooling values therefrom while raising the temperature thereof, and making the cooled water from the water containing compartment available initially for use in the precooling zones to acquire heat therefrom imparted to the containers passing out of the pasteurizing zone when a skip occurs in the movement of containers in the preheating zones.

4,279,859

SIMULTANEOUS RADIOASSAY OF FOLATE AND VITAMIN B_{12}

Sidney Gutcho, Monsey, and Lillian Mansbach, New City, both of N.Y., assignors to Becton Dickinson & Company, Paramus, N.J.

Division of Ser. No. 817,563, Jul. 21, 1977, Pat. No. 4,146,602, which is a continuation-in-part of Ser. No. 762,992, Jan. 27, 1977, abandoned. This application Jun. 26, 1978, Ser. No. 919,387

Int. Cl.³ B65D *71/00;* **G01N** *33/48*

U.S. Cl. 422—61 **67 Claims**

1. A reagent kit for use in effecting a simultaneous assay for folate and vitamin B_{12} in a sample containing both substances but free of endogenous binder therefor, wherein said sample is contacted with a binder for the folate, a binder for the vitamin B_{12}, a folate tracer labeled with radioiodine, and a vitamin B_{12} tracer labeled with radiocobalt and the radioactivity of at least one of the bound and unbound portions is counted to determine both folate tracer and vitamin B_{12} tracer, said reagent kit comprising:

a binder for the folate and a binder for the vitamin B_{12}; and

a folate tracer labeled with radioiodine and a vitamin B_{12} tracer labeled with radiocobalt.

4,279,860

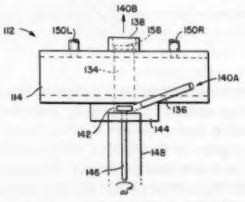
MULTIPLE INJECTOR FLOW THROUGH DISSOLUTION CELL FOR DISSOLUTION TESTING APPARATUS

Victor F. Smolen, Anchorage Lodge, Rouses Point, N.Y. 12979

Filed Jun. 25, 1980, Ser. No. 162,780

Int. Cl.³ G01N *21/13*

U.S. Cl. 422—63 **9 Claims**



1. A multiple-injector dissolution cell comprising:

(a) a body member having a central aperture, and a dissolution chamber positioned between an input port region and an output port region;

(b) a moveable insert member having a plurality of flow channels and adapted for an air tight fit within said aperture;

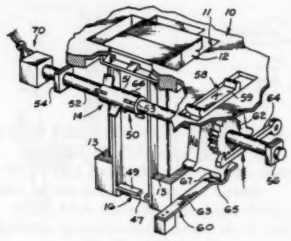
(c) means for selectively moving said moveable insert member within said aperture to align one of said flow channels with said dissolution chamber; and

(d) at least one evacuation port positioned within said body member for evacuating the air from a selected flow chamber prior to its being aligned with said dissolution chamber.

4,279,861
CARTRIDGE DISCRIMINATOR FOR AN AUTOMATED ANALYSIS SYSTEM

Thomas C. Jessop, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 9, 1979, Ser. No. 37,250
Int. Cl.[3] G01N *35/04*
U.S. Cl. 422—67 20 Claims



5. Apparatus for chemical analysis of a sample fluid whereby a plurality of operations are performed in sequence on a test element adapted to receive said fluid and to produce a response indicative of a characteristic of the fluid, said elements being contained in a cartridge and being removable therefrom by a transfer means, said cartridge having code means thereon indicative of the type of test element contained in the cartridge, said apparatus comprising:

support means for receiving a cartridge of test elements and for locating the cartridge such that the elements can be sequentially removed from the cartridge by said transfer means;

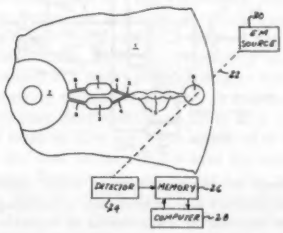
discriminator means disposed adjacent the support means for controlling the loading of cartridges into said support means, said discriminator means having projection means adapted to cooperate with said support means to prevent the loading of cartridges not having a predetermined code means; and

control means operatively connected to said discriminator means, said control means being adapted to position said discriminator means such that only a cartridge having a code means corresponding to a selected type of test element can be loaded into said support means.

4,279,862
CENTRIFUGAL PHOTOMETRIC ANALYZER

Jean-Pierre Bretaudiere, 1 Alden Pl., Schenectady, N.Y. 12308, and Paul Prunenec, 44, Rue des Ecoles, Paris, France (75005)

Filed Nov. 16, 1978, Ser. No. 961,478
Claims priority, application France, Nov. 17, 1977, 77 34544
Int. Cl.[3] G01N *21/07*
U.S. Cl. 422—72 13 Claims



1. A rotor for a centrifugal analyzer comprising:

a generally disc shaped member defining therein;

a loading cell for a sample to be analyzed, said sample cell including an outlet,

a loading cell for a reagent, said reagent cell including an outlet,

a measuring chamber,

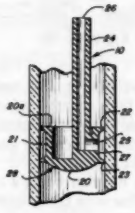
a common transfer channel having an inlet and an outlet, a separate communicating passage between the outlet of each said loading cell and said transfer channel inlet each of which passages passes the fluid from the respective cell to said transfer channel inlet without passing through the other cell, the outlet of said transfer channel transferring both the sample and the reagent to the measuring chamber, and

obstacle means in said transfer channel for mixing the sample and the reagent during the transfer.

4,279,863
REAGENT SEPARATOR FOR A BLOOD COLLECTION TUBE

William R. Friehler, St. Louis, Mo., assignor to Sherwood Medical Industries, Inc., St. Louis, Mo.

Filed Sep. 12, 1979, Ser. No. 75,327
Int. Cl.[3] C01G *23/00, 9/00;* B04B *9/12*
U.S. Cl. 422—102 4 Claims



1. An apparatus (10) for retaining a reagent material (17) disposed within a sample collection tube (11) physically separate from a sample until centrifugation, comprising:

a flexible barrier (10) positioned within said sample collection tube (11) between the reagent material (17) and an evacuated upper chamber (12) into which the sample is drawn, said flexible barrier (10) having a spherical bottom wall (20) and a cylindrical side wall (21), said barrier (10) having a first ridge (22) formed around the upper peripheral edge of said side wall (21), said first ridge (22) forming a first seal with the inner surface of the sample collection tube (11), said first seal remaining intact until centrifugation of the sample collection tube (11),

a second ridge (23) formed around the lower peripheral edge of said side wall (21), said second ridge (23) forming a second seal with the inner surface of the sample collection tube (11), said second seal (23) remaining intact until centrifugation of the sample collection tube (11),

said spherical bottom wall (20) of the flexible barrier (10) mates with the bottom of the sample collection tube (11) to discharge substantially all of the reagent material past the barrier upon centrifugation of the collection tube.

4,279,864
MONOLITHIC CATALYST CONVERTER

Akio Nara, Nishio; Shigeru Takagi, Okazaki, and Kazuma Matsui, Toyohashi, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Dec. 3, 1979, Ser. No. 99,753
Claims priority, application Japan, Dec. 4, 1978, 53/150336; Dec. 27, 1978, 53/180300[U]; Mar. 15, 1979, 54/30420
Int. Cl.[3] F01N *3/28, 7/14, 7/16*
U.S. Cl. 422—179 4 Claims

1. A monolithic catalyst converter to be disposed in an

exhaust gas passage of an internal combustion engine comprising:

a monolithic catalyst composed of a honeycomb structure having a plurality of axially extending open passages and retaining catalyst metal in the walls defining said passages;

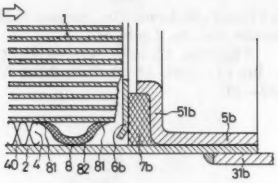
a cylindrical metallic container for receiving said catalyst therein;

a radial shock absorbing member composed of metallic fine wires, which is disposed in a space between said monolithic catalyst and said container;

the annular metallic plate disposed in the periphery of each of the axial end surfaces of said monolithic catalyst,

a retaining member fixed to an inner wall of said container in each of the ends thereof so as to be opposed to said plate at a predetermined distance;

an axial shock absorbing member composed of metallic fine wire fabric, which is disposed between said plate and said retaining member; and



at least one heat-resistance and resilient annular sealing member having high density which is disposed in said space between said monolithic catalyst and said container under pressure for preventing passage of exhaust gas through that space,

said annular sealing member being a compact body of compressed metallic fine wire fabric and having a saddle shape in radial cross section for continuously causing an effective exhaust gas seal of said space even though said sealing member has said high density and even when the container is subjected to temperature changes during operation of said converter,

wherein said annular sealing member has a radial cross section of a letter V or a letter U shape and a bottom portion of said sealing member is contacted with the inner wall of said container and edge portions of said sealing ember are contacted with the outer wall of said catalyst.

4,279,865

ORGANIC COMPOUND OXIDATION PLANT

Genrikh D. Lyakhevich, ulitsa Matusevicha, 3, kv. 146; Petr I. Belkevich, ulitsa Kulmana, 15, kv. 55, both of Minsk; Alexandr D. Rudkovsky, ulitsa Dvinskaya, 13, kv. 1, Novopolotsk; Alexandr E. Sokolovsky, ulitsa Olshevskogo, 33, korpus 1, kv. 67, and Alexandr I. Kirilchik, ulitsa Yakuba Kolosa, 34, kv. 46, both of Minsk, all of U.S.S.R.

Filed Dec. 27, 1979, Ser. No. 107,538

Int. Cl.³ B01J *14/00, 19/26*

U.S. Cl. 422—187 **8 Claims**

1. An organic compound oxidation plant, comprising:

a vessel for organic compounds;

a vessel for a liquid-phase oxidizer;

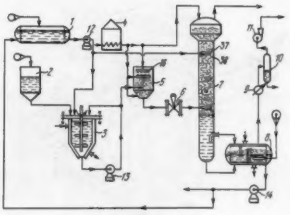
a mixer communicating with the vessel for the organic compounds and with the vessel for the liquid-phase oxidizer, which forms an oxidizer premix.

a furnace for heating the organic compound, communicating with said vessel for organic compounds;

a reactor having spray means communicating with said furnace for introducing the organic compounds therein, and dispersing means communicating with the mixer for introducing the oxidizer premix therein, to thereby form a reaction mass, and wherein said spray means and said dispersing means are arranged opposite each other and adapted so that their respective flows intimately contact each other;

a reducing means communicating with said reactor, to receive the reaction mass;

a froth breaker having an upper enlarged portion and a lower narrower portion, the froth breaker communicating with said furnace, with means for receiving the organic compounds therein;



said froth breaker also communicating with said organic compound vessel, having additional means for receiving the organic compounds therein;

said froth breaker also communicating with said reducing unit, with means for receiving the reaction mass therein;

a degassing unit communicating with said froth breaker to receive the reaction mass.

4,279,866

METHOD OF PRODUCING WEAKLY ACIDIC CATION EXCHANGE RESIN PARTICLES CHARGED WITH URANYL IONS

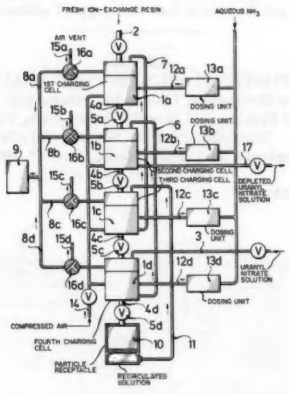
Helmut Ringel, Niederzier-Hambach; Erich Zimmer, Jülich, and Nabil Abdelmonem, Niederzier-Hambach, all of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich Gesellschaft mit beschränkter Haftung, Jülich, Fed. Rep. of Germany

Filed Jul. 19, 1978, Ser. No. 926,103

Claims priority, application Fed. Rep. of Germany, Jul. 23, 1977, 2733396

Int. Cl.³ C01G *43/00*

U.S. Cl. 423—7 **7 Claims**



1. A process for charging weakly acidic cationic ion exchange resin particles with uranyl ions, comprising contacting the particles stepwise in a succession of separate contacting stages with respective aqueous uranyl nitrate solutions, said solutions having higher uranium concentrations from stage to stage, and adding an alkaline medium to the uranyl nitrate solution in each stage to establish successive pH values of the

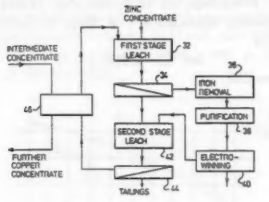
uranyl nitrate solution contacting the particles in the successive stages in dependence upon the uranium concentration effective for maximum charging of the particles with uranyl ions and which numerically increases in pH value from stage to stage in the succession in which said particles are contacted, the pH being adjusted in each stage by adding the alkaline medium until precipitation is about to commence.

4,279,867

PROCESS FOR THE RECOVERY OF COPPER AND ZINC VALUES FROM SULPHIDIC ORE

Donald R. Weir, Fort Saskatchewan, Canada, assignor to Sherritt Gordon Mines Limited, Toronto, Canada

Filed Mar. 13, 1980, Ser. No. 129,926
Claims priority, application Canada, Feb. 8, 1980, 345417
Int. Cl.³ C01G 9/06
U.S. Cl. 423—26 **12 Claims**



1. A process for the recovery of copper and zinc values from copper and zinc containing sulphidic ore comprising subjecting ground ore to a flotation operation including a first flotation step to float an initial copper concentrate, feeding said initial copper concentrate to a second flotation step to float a relatively zinc free copper concentrate, feeding remaining ore from the first flotation step to a third flotation step to float an initial zinc concentrate, feeding the remaining ore from the third flotation step to a fourth flotation step to float a copper and zinc containing material, producing an intermediate concentrate containing from about 5 to about 25% copper and from about 2 to about 25% zinc, with a total of at least about 12% copper and zinc, by selecting at least the remaining ore from the second flotation step, and producing a zinc concentrate containing at least about 20% zinc by at least selecting a portion of the initial zinc concentrate.

10. A process for the recovery of copper and zinc values from copper and zinc containing sulphidic ore comprising subjecting ground ore to a flotation operation including a first flotation step to float an initial copper concentrate, feeding said initial copper concentrate to a second flotation step to float a relatively zinc free copper concentrate, feeding remaining ore from the first flotation step to a third flotation step to float an initial zinc concentrate, feeding the remaining ore from the third flotation step to a fourth flotation step to float a copper and zinc containing material, producing an intermediate concentrate containing from about 5 to about 25% copper and from about 2 to about 25% zinc, with a total of at least about 12% copper and zinc, by selecting at least the remaining ore from the second flotation step, producing a zinc concentrate containing at least about 20% zinc by at least selecting a portion of the initial zinc concentrate, and leaching said zinc concentrate under oxidizing acidic conditions at superatmospheric pressure to produce a leach solution containing dissolved zinc.

4,279,868

METHOD FOR LEACHING METAL BEARING ORES

Henry Von Kohorn, 22 Perkins Rd., Greenwich, Conn. 06830

Filed Mar. 24, 1980, Ser. No. 133,516
Int. Cl.³ G22B 3/00; C01G 5/00, 7/00
U.S. Cl. 423—29 **12 Claims**

1. A method for the extraction and recovery of metals from ores by leaching crushed ore comprising:

(a) providing a plurality of removable, void-creating members inside the ore body to be leached,

(b) partially performing the leaching,

(c) removing said members by pulling out so as to create internal voids in said ore body, causing partial internal collapse and shifting of ore in said ore body, and

(d) completing the leaching.

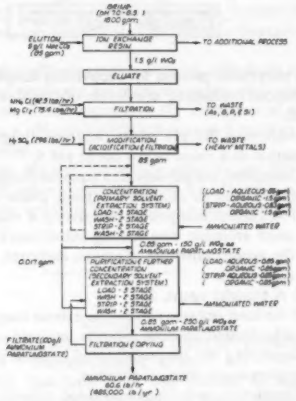
6. The method of claim **1** applied to the alkaline cyanide heap leaching of gold and silver bearing ores.

4,279,869

PROCESS FOR RECOVERING CONCENTRATED, PURIFIED TUNGSTEN VALUES FROM BRINE

Norman W. Coulson, Oklahoma City, Okla., assignor to Kerr-McGee Corporation, Oklahoma City, Okla.

Filed Dec. 13, 1979, Ser. No. 103,031
Int. Cl.³ C01G 41/00
U.S. Cl. 423—54 **22 Claims**



1. A process for recovering concentrated, purified tungsten values from a brine, the brine containing a minor amount of soluble tungsten and a substantial amount of impurities, the process comprising:

(a) contacting the brine with a water-insoluble ion exchange resin to adsorb the tungsten;

(b) eluting the adsorbed tungsten from the water-insoluble ion exchange resin with an effective amount of an aqueous eluant to provide an aqueous eluate rich in tungsten values;

(c) treating the aqueous eluate rich in tungsten values to convert the tungsten values to an extractable species of tungsten values;

(d) recovering the extractable species of tungsten values from the aqueous eluate to substantially concentrate the tungsten values;

(e) contacting the concentrated tungsten values with an extractant preferential to the tungsten values to substantially load the extractant with the concentrated tungsten values and to exclude impurities from the extractant; and

(f) stripping the tungsten values from the extractant to provide a product having concentrated, purified tungsten values.

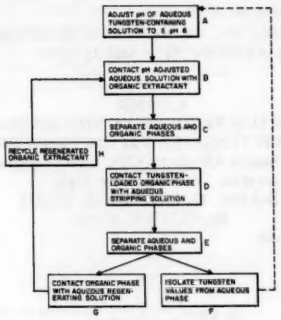
4,279,870
LIQUID-LIQUID EXTRACTION PROCESS FOR THE RECOVERY OF TUNGSTEN FROM LOW LEVEL SOURCES

Samuel Natansohn, Sharon, and Sophia R. Su, Wellesley, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Continuation-in-part of Ser. No. 59,803, Jul. 23, 1979, abandoned, which is a continuation-in-part of Ser. No. 18,488, Mar. 8, 1979, abandoned. This application Sep. 15, 1980, Ser. No. 186,950

Int. Cl.³ C01G *41/00*

U.S. Cl. 423—54 **17 Claims**



1. A recyclable process for recovering tungsten from aqueous solutions containing low levels of tungsten comprises the steps of:

(a) Adjusting the pH of the aqueous tungsten-containing solution to a value below about pH 6;

(b) Contacting the pH-adjusted aqueous tungsten-containing solution with an extractant organic phase comprising:

(1) A chelate compound comprising a vicinally disubstituted aromatic ring having substituents selected from the group consisting of amino, carboxyl, hydroxyl, and sulfhydryl,

(2) A transfer agent, and

(3) An inert organic solvent, to extract tungsten from said pH-adjusted aqueous solution into said organic phase;

(c) Separating the tungsten-loaded organic phase from the tungsten-spent aqueous solution;

(d) Contacting said tungsten-loaded organic phase with a basic aqueous stripping solution to transfer tungsten from said tungsten-loaded organic phase to said aqueous stripping solution;

(e) Separating the tungsten-loaded aqueous stripping solution from the tungsten-spent organic phase and thereafter isolating the tungsten values from said tungsten-loaded aqueous stripping solution;

(f) Contacting the tungsten-spent organic phase with an aqueous regenerating solution to regenerate said extractant organic phase; and

(g) Recycling the regenerated extractant organic phase in step (b).

4,279,871
PROCESS FOR TREATING CHLORINATED TITANIFEROUS MATERIAL TO REMOVE VANADIUM

James P. Bonsack, Aberdeen, Md., assignor to SCM Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 89,982, Oct. 31, 1979, abandoned. This application Jun. 6, 1980, Ser. No. 157,279

Int. Cl.³ C01G *23/047, 31/04*

U.S. Cl. 423—74 **10 Claims**

1. A process for removing vanadium values from chlorinated vanadium-containing titaniferous materials, which comprises:

reducing substantially all of said vanadium values to a less volatile form by reacting with an effective amount of a high surface area carbon at a temperature in excess of about 700° C., said high surface area carbon having a surface area of at least about 10 m^2/g.,

cooling said chlorinated titaniferous materials containing reduced vanadium values to a temperature of less than about 450° C., producing a chlorinated reduced vanadium-values containing phase and a chlorinated titaniferous material-containing phase distinct from said chlorinated, reduced vanadium-values containing phase, and

separating said chlorinated, reduced, vanadium-values containing phase from said chlorinated titaniferous material-containing phase.

4,279,872
METHOD OF SCRUBBING ACID GASES FROM GAS MIXTURES

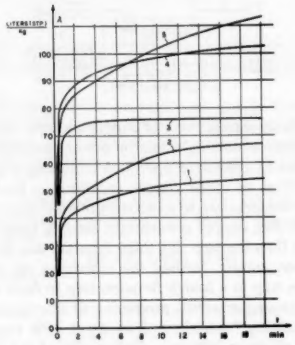
Eberhard Lassmann, Herrnhausen; Peter Köhler, Siegertsbrunn; Franz Beran, and Hans J. Gerhards, both of Munich, all of Fed. Rep. of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Sep. 10, 1979, Ser. No. 73,801

Claims priority, application Fed. Rep. of Germany, Sep. 11, 1978, 2839506

Int. Cl.³ C01B *17/16*

U.S. Cl. 423—228 **7 Claims**



1. A method of scrubbing an acid gas selected from the group consisting of carbon dioxide and a sulfur containing gas from a gas mixture which comprises the step of treating the gas mixture with an aqueous scrubbing solution consisting of 5 to 40% hexamethylene diamine and balance water at a temperature enabling the scrubbing solution to absorb said acid gas from the gas mixture.

4,279,873
PROCESS FOR FLUE GAS DESULFURIZATION

Karsten S. Felsvang, Allerod; Ove E. Hansen, Vaerlose, and Elisabeth L. Rasmussen, Holte, all of Denmark, assignors to A/S Niro Atomizer, Soborg, Denmark

Filed May 17, 1979, Ser. No. 39,892

Claims priority, application Denmark, May 19, 1978, 2237/78

Int. Cl.³ C01B *17/00*

U.S. Cl. 423—242 **13 Claims**

1. A process for desulfurization of fly ash-containing flue gas from the combustion of coal, comprising the steps of:

(a) atomizing an aqueous feed suspension comprising $Ca(OH)_2$ and fly ash into the hot flue gas coming from a boiler without previous removal of fly ash therein, the amount of said suspension and the water content thereof

being adjusted to obtain a temperature of the desulfurized flue gas being 8°–40° C. above the saturation temperature of said gas, thereby simultaneously drying the atomized droplets of suspension and reducing the SO_2 content of the flue gas;

(b) collecting a fly ash-containing dry powder comprising conglomerates of fly ash originating from said feed suspension with materials formed by the drying and SO_2 absorption step;

(c) preparing an aqueous suspension from a recycled portion of said fly ash-containing dry powder and disposing of the remaining portion; and

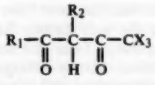
(d) adding freshly slaked lime to the last-mentioned suspension as makeup $Ca(OH)_2$ to produce a feed suspension to be atomized in step (a).

4,279,874
CU(1) ACETYLACETONATE COMPLEXES FOR CO SEPARATION

Gerald Doyle, Whitehouse Station, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Apr. 17, 1980, Ser. No. 141,055
Int. Cl.³ B01D *53/34*
U.S. Cl. 423—246 **10 Claims**

1. A process for removing CO from a gas stream which comprises contacting the gas stream with an absorbent solution containing an inert solvent and a Cu(I) salt, said salt being the reaction product of a Cu(I) compound and a halogenated acetylacetone of the formula:

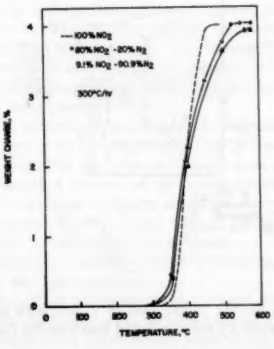


where X is F or Cl, R_1 is CX_3, linear or branched C_1 to C_8 alkyl, C_4 to C_6 heterocycle containing O, S or N, or C_6 to C_{10} aryl, R_2 is hydrogen or C_1 to C_6 alkyl, or R_1 and R_2 are joined together to form a C_6 ring.

4,279,875
METHOD OF RELEASING FISSION GASES FROM IRRADIATED FUEL

Lane A. Bray, Richland, and Allyn L. Boldt, Kennewick, both of Wash., assignors to Exxon Nuclear Company, Inc., Bellevue, Wash.

Continuation of Ser. No. 766,142, Feb. 7, 1977, abandoned. This application Oct. 13, 1978, Ser. No. 951,266
Int. Cl.³ G21F *9/30*
U.S. Cl. 423—249 **17 Claims**



1. A process for releasing tritium from irradiated fuel which comprises reacting an irradiated nuclear fuel pellet with an oxidizing gas consisting essentially of nitrogen oxide constant at a reaction temperature between about 325° and 800° C. for a time sufficient to form a fine powder thereby releasing the tritium.

4,279,876
CONVERSION OF EXTRACTION RESIDUES ORIGINATING FROM PHOSPHORIC ACID DECONTAMINATION TO SOLID DEPOSITION PRODUCTS

Klaus Schrödter, Cologne; Reinhard Gradl, Hürth-Knapsack; Klaus-Peter Ehlers, Erftstadt, and Wolfgang Scheibitz, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 7, 1980, Ser. No. 128,265
Claims priority, application Fed. Rep. of Germany, Mar. 12, 1979, 2909572
Int. Cl.³ C01B *15/16, 25/26*
U.S. Cl. 423—305 **5 Claims**

1. A process for converting raffinates, which are obtained in the decontamination of phosphoric acid by extraction with a solvent, to solid deposition products, wherein the water-containing raffinates are reacted with solid hydrate of lime or quicklime which comprises:

(a) admixing the raffinates with a quantity of water necessary for them to ensure, after reaction with hydrate of lime or quicklime, the formation of an aqueous filterable suspension;

(b) admixing the raffinates with a quantity of hydrate of lime or quicklime necessary for them to ensure, after reaction and filtration of the suspension, the formation of a filter cake having a pH-value within the range 9 to 14 in aqueous suspension;

(c) filtering the reaction suspension, after incomplete reaction at a pH-value within the range 5 to 8; and

(d) allowing the resulting filter cake to react completely and depositing it.

4,279,877
OXIDATIVE CONTROL OF POST PRECIPITATION IN PHOSPHORIC ACID

Richard N. Hill, Lakeland, Fla., and Moises G. Sanchez, Severna Park, Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed Jan. 10, 1980, Ser. No. 111,013
Int. Cl.³ C01B *25/16*
U.S. Cl. 423—321 R **10 Claims**

1. In the method of making wet process phosphoric acid analyzing about 57–63% P_2O_5 prepared by steps including

(a) clarifying crude feed acid in a clarifier to provide a clarified acid and a sludge-containing underflow, said feed acid analyzing about 26–36% P_2O_5, having an Fe (as Fe_2O_3):-P_2O_5 weight ratio of at least 0.04; and at least some of said Fe being present as Fe^{++};

(b) treating the clarified acid with aluminum silicate in an aluminum silicate treatment zone;

(c) concentrating the treated acid to about 46–51% P_2O_5;

(d) settling solids in the concentrated acid in a crystallizer-settler providing an overflow and an underflow;

(e) sending crystallizer-settler underflow to the clarifier in (a) and sending clarifier underflow to the reaction train;

(f) further concentrating the overflow in (d) to about 57–63% P_2O_5; the improvement comprising adding an oxidant to the acid at a point between the clarification step in (a) and the concentration step in (c) to oxidize substantially all Fe^{++} to Fe^{+++}, whereby the post-precipitation characteristics of the acid are improved.

4,279,878

PROCESS FOR FREEING PHOSPHORIC ACID FROM ORGANIC CONTAMINANTS

Alexander Maurer, Hürth; Klaus Schrödter, Cologne, and Gero Heymer, Erftstadt, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 17, 1980, Ser. No. 131,234

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1979, 2910711

Int. Cl.[3] C01B *25/16*

U.S. Cl. 423—321 R 8 Claims

1. A process for freeing aqueous phosphoric acid solutions from organic contaminants by admixing the solutions with hydrogen peroxide, which comprises: admixing and reacting the solutions with hydrogen peroxide in the presence of, as catalyst, (a) a noble metal, (b) a mixture of metal oxides or (c) a mixture of (a) and (b), the metal oxide mixture consisting of Al_2O_3 and an oxide of manganese, cerium, iron or copper, the amount of catalyst being at least 0.01 g per g H_2O_2.

4,279,879

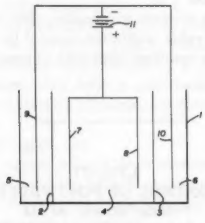
SILICA GEL

Milton E. Winyall, Columbia, Md., and Charles Davidoff, Manhasset, N.Y., assignors to W. R. Grace & Co., New York, N.Y.

Filed Oct. 1, 1979, Ser. No. 80,485

Int. Cl.[3] C01B *33/14;* C25B *1/00, 7/00*

U.S. Cl. 423—335 14 Claims



1. A regular density silica xerogel having at least about 85 percent of the pore volume provided by pores having a pore diameter of less than about 30 angstroms.

4,279,880

ACETYLENE BLACK WITH HIGH ELECTRICAL CONDUCTIVITY AND HIGH ABSORPTIVE POWER

Claude Giet, La Barthe de Neste, France, assignor to Produits Chimiques Ugine Kuhlmann, Courbevoie, France

Continuation of Ser. No. 884,442, Mar. 7, 1978, abandoned. This application Sep. 11, 1979, Ser. No. 74,569

Claims priority, application France, Mar. 9, 1977, 77 06894

Int. Cl.[3] C01B *31/00, 31/02;* C09C *1/48*

U.S. Cl. 423—445 9 Claims

1. A carbon black having a carbon content greater than 99%, a mean particle diameter of 250 to 300 Å, an electrical resistivity, measured under a pressure of 6.3 bars, of 0.270 to 0.350 ohm.cm and a DBP index of 400 to 500 ml per 100 g of black.

4,279,881

CARBON BLACK PRODUCTION FROM SOLID CARBONACEOUS FEEDSTOCK

Paul J. Cheng, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 860,801, Dec. 15, 1977, Pat. No. 4,206,175, which is a continuation of Ser. No. 690,810, May 27, 1976, abandoned, which is a continuation-in-part of Ser. No. 276,374, Jul. 31, 1972, abandoned. This application Dec. 21, 1979, Ser. No. 106,200

Int. Cl.[3] C01B *31/02;* C09C *1/48*

U.S. Cl. 423—456 8 Claims

1. A process for producing carbon black comprising:

a. introducing a hydrocarbon feed upward in essentially axial direction into the aspiration end of a reaction section arranged coaxially within a carbon black reactor having a vertical axis;

b. introducing a hot combustion mass comprising hot combustion gases, solid carbonaceous material, and ash into said reactor, said hot combustion mass being produced by the oxidation of solid carbonaceous material, said hot combustion mass being introduced tangentially into said reactor;

c. passing said hot combustion mass in a path surrounding the reactor axis in an essentially helically shaped line through said reactor at a velocity sufficient to cause a principal portion of said ash to flow proximate the inner wall of the reactor, said hot combustion mass being passed in a direction generally opposite to the direction of injection of the hydrocarbon feed;

d. separating hot combustion gases from said hot combustion mass and passing the hydrocarbon feed and the hot combustion gases separated from the combustion mass into said reaction section, thereby mixing the hot combustion gases with the hydrocarbon feed in said reaction section to cause the decomposition of the hydrocarbon feed and the formation of the carbon black;

e. removing ash from the base of said reactor at least intermittently and

f. recovering carbon black from said reaction section.

4,279,882

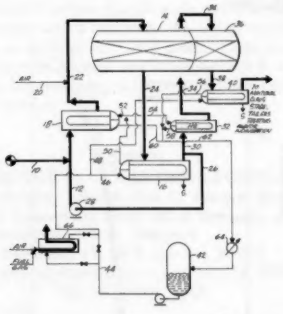
PROCESS FOR SULFUR PRODUCTION

David K. Beavon, Pasadena, Calif., assignor to Ralph M. Parsons Company, Pasadena, Calif.

Filed Apr. 27, 1979, Ser. No. 33,873

Int. Cl.[3] C01B *17/04*

U.S. Cl. 423—574 R 31 Claims



1. A process for the production of sulfur with control of process temperature by use of a liquid heat transfer fluid which comprises:

(a) providing a closed loop heat transfer system including a liquid heat transfer fluid;

(b) condensing sulfur from a product gas stream containing

sulfur, sulfur dioxide, and hydrogen sulfide by indirect heat exchange with cooled liquid heat transfer fluid stream in a first indirect heat exchange zone to provide a cooled residual gas comprising hydrogen sulfide and sulfur dioxide and a heated liquid heat transfer fluid stream, said product gas stream being formed by contacting, in a catalytic selective oxidation zone, a feed gas heated, at least in part, for feed to said catalytic selective oxidation zone by indirect heat exchange with a first portion of the heated liquid heat transfer fluid stream in a second indirect heat exchange zone, said feed gas comprising an acid gas stream containing from about 1 to 100 percent by volume hydrogen sulfide in admixture with oxygen present in an amount of from about 70 to 130 percent of the stoichiometric amount required for oxidation of the hydrogen sulfide to elemental sulfur and a recycle gas which is a portion of a residual gas comprising hydrogen sulfide and sulfur dioxide resulting from condensation of sulfur from the effluent of the catalytic selective oxidation zone, with a selective oxidation catalyst capable of selectively oxidizing hydrogen sulfide to sulfur dioxide substantially without formation of sulfur trioxide and catalytically converting introduced hydrogen sulfide to sulfur dioxide and sulfur at a temperature above the kindling temperature of the catalyst and below an upper reaction temperature of about 850° F., the upper reaction temperature being selectively controlled by the amount of recycle gas introduced to the catalytic selective oxidation zone;

(c) indirectly heating the balance of cooled residual gas exiting the first heat exchange zone in a third indirect heat exchange zone with a second portion of the heated liquid heat transfer fluid stream to a temperature for feed to a Claus conversion stage;

(d) passing the heated balance of the residual gas stream to at least one Claus conversion zone to form additional sulfur; and

(e) combining liquid heat transfer fluid streams from the second and third indirect heat exchange zones and cooling the combined liquid heat transfer fluid streams for recycle to the process.

4,279,883

PROCESS FOR PRODUCING HYDROGEN PEROXIDE

Yusuke Izumi, Shinnanyo; Hidetaka Miyazaki, and Shin-ichi Kawahara, both of Tokuyama, all of Japan, assignors to Tokuyama Soda Kabushiki Kaisha, Yamaguchi, Japan

Filed Dec. 3, 1976, Ser. No. 747,214

Claims priority, application Japan, Dec. 10, 1975, 50-146312

Int. Cl.³ C01B *15/02*

U.S. Cl. 423—584 **6 Claims**

1. A continuous process for preparing hydrogen peroxide by reacting hydrogen with oxygen in an aqueous medium containing a platinum-group catalyst which comprises:

a. dissolving hydrogen into the aqueous medium in an amount such that the partial pressure of hydrogen in a gaseous phase contacting the aqueous medium is at least 0.001 atmospheres,

b. adding platinum-group catalyst having adsorbed thereon hydrogen in an amount ranging from at least 0.1 hydrogen atom adsorbed per atom of the platinum-group metal to the saturated amount of adsorption to the aqueous medium containing hydrogen dissolved therein,

c. introducing hydrogen and oxygen gas into the aqueous medium to form hydrogen peroxide,

d. withdrawing aqueous medium containing hydrogen peroxide and spent catalyst,

e. adding fresh platinum-group catalyst having adsorbed thereon hydrogen in an amount ranging from at least 0.1 hydrogen atom adsorbed per atom of the platinum-group metal to the saturated amount of adsorption to the withdrawn aqueous medium to replace the spent platinum-group catalyst,

f. recycling the withdrawn aqueous medium to which the fresh catalyst has been added for further reaction.

4,279,884

PROCESS FOR PREPARATION OF ANTISERA

Arthur R. Bradwell, Harborne, and David Burnett, Finchfield, both of England, assignors to University of Birmingham, Birmingham, England

Filed Aug. 16, 1977, Ser. No. 825,126

Claims priority, application United Kingdom, Aug. 25, 1976, 35319/76

Int. Cl.³ A61K *33/48, 49/00, 43/00*; C01G *7/00*

U.S. Cl. 424—1 **7 Claims**

1. A process for the preparation of an antiserum, including steps of:

(i) reacting, by means of two dimensional electrophoresis a serum sample which includes a protein to which the required antiserum is to be specific, with a first antiserum sample which is known to include the required specific antiserum,

(ii) selecting, from the results of the aforesaid reaction, of a first antigen/antibody complex which corresponds to the protein to which the required antiserum is specific,

(iii) injecting an animal with said first complex, the antigen in said first complex being the only antigen so injected which was present in the serum which provided said serum sample,

(iv) subsequent withdrawal of antiserum from the animal.

7. A process as claimed in claim 1 in which the second dimension step of said electrophoresis reaction is continued for 24 hours.

4,279,885

SOLID PHASE ASSAY

Max G. Reese, Salt Lake City; Dennis K. Ransom, Granger, and LaVell R. Johnson, Salt Lake City, all of Utah, assignors to Becton Dickinson & Company, Paramus, N.J.

Filed May 19, 1978, Ser. No. 907,741

Int. Cl.³ G01N *33/48*; G01T *1/00*

U.S. Cl. 424—1 **8 Claims**

1. In a competitive protein binding assay wherein an analyte and tracer are passed through a flow through chamber containing a receptor for both the tracer and analyte supported on a solid support, and at least one of the amount of tracer bound to the receptor and the amount of tracer which passes through the chamber is determined, the improvement comprising:

passing the analyte in the absence of tracer through said chamber to bind analyte to the receptor with any unbound analyte passing through the chamber; and subsequently passing tracer through the chamber to bind tracer to the receptor with any unbound tracer passing through the chamber.

4,279,886

TEST FOR PANCREATIC EXOCRINE FUNCTION

Robert H. Allen, Englewood, Colo., assignor to University Patents, Inc., Norwalk, Conn.

Filed Jan. 2, 1979, Ser. No. 270

Int. Cl.³ A61K *49/00, 43/00*; G01T *1/00*

U.S. Cl. 424—1 **46 Claims**

1. In the method of testing pancreatic exocrine function of a subject the steps of:

placing in the subject's digestive system a complex of (first) labelled vitamin B_{12} bound to intrinsic factor protein (IF) said complex being designated as IF-B_{12}; and

also placing in the subject's digestive system a composition including (second) labelled vitamin B_{12} bound to binding (means), substance, (wherein said binding means bind with said second labelled B_{12}, and) wherein said binding (means) substance substantially inhibits the binding of said (second) labelled B_{12} bound to said binding substance by

IF in said subject's digestive system until said composition is acted upon by exocrine pancreatic enzymes.

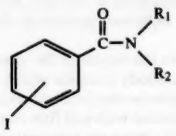
4,279,887

AMIDES USEFUL AS BRAIN IMAGING AGENTS

Ronald M. Baldwin, San Francisco; Tz-Hong Lin, Fremont, and Harry S. Winchell, Lafayette, all of Calif., assignors to Medi-Physics, Inc., Emeryville, Calif.

Filed Nov. 29, 1978, Ser. No. 964,562
Int. Cl.[3] A61K *49/00, 43/00;* C07C *103/37*
U.S. Cl. 424—1.5 7 Claims

1. A method of imaging the brain comprising intravenously injecting an effective amount of a composition comprising a compound of the formula



wherein I is a radioisotope of iodine, R_1 and R_2 are the same or different and are selected from the group consisting of hydrogen, hydroxy, alkyl, aryl, substituted aryl, aralkyl, anilino and carbamoylmethyl or R_1 and R_2 taken together with the nitrogen to which they are attached form a 5- or 6-membered ring, in a carrier suitable for intravenous injection and scanning the brain with a scintiscanning means.

4,279,888

ORAL COMPOSITION

Nobuo Suganuma, Funabashi; Michio Uematsu, Isehara; Hiroshi Mandai, Chiba; Yasunobu Horiguchi, Kamagaya, and Koji Masamizu, Tokyo, all of Japan, assignors to Lion Corporation, Tokyo, Japan

Filed Dec. 28, 1979, Ser. No. 107,868
Claims priority, application Japan, Dec. 29, 1978, 53-165284; Dec. 30, 1978, 53-165049
Int. Cl.[3] A61K *7/16, 7/18, 7/28*
U.S. Cl. 424—49 22 Claims

1. An oral composition having a favorable feeling upon use and improved stability comprising: 0.1 to 5% by weight of the total composition of a fatty acid ester of a sugar alcohol selected from the group consisting of lactitol, maltitol, maltotriitol, maltotetraitol, maltopentaitol, maltohexaitol, maltoheptaitol and mixtures thereof, the acyl group of the sugar alcohol fatty acid ester having 8 to 20 carbon atoms and the balance being at least one other oral composition ingredient.

4,279,889

PERIODONTAL DENTAL COMPOSITION

Eric Baines, Flixton, and Kenneth Harvey, Wilmslow, both of England, assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Apr. 24, 1980, Ser. No. 143,066
Claims priority, application United Kingdom, May 15, 1979, 16873/79
Int. Cl.[3] A61K *7/16, 7/18*
U.S. Cl. 424—57 6 Claims

1. A periodontal dental composition consisting essentially of about 0.01–5% by weight of folic acid and a polishing agent which is principally dicalcium phosphate.

4,279,890

COSMETIC FACIAL POWDER CONTAINING WALNUT SHELL FLOUR

Thomas C. Harris, Paterson, and Arthur Georgalas, Leonardo, both of N.J., assignors to Chattem, Inc., Chattanooga, Tenn.

Continuation of Ser. No. 620,731, Oct. 8, 1975, abandoned. This application May 23, 1977, Ser. No. 799,229
Int. Cl.[3] A61K *7/021*
U.S. Cl. 424—69 10 Claims

1. A loose face powder composition which comprises about 40 percent by weight walnut shell flour having a particle size less than 30 microns, about five percent by weight titanium coated mica, about four percent by weight magnesium stearate, about 49.25 percent by weight ground mica of not more than about 80 microns, and the balance selected from the group consisting of a fungicide, a colorant, and a perfume.

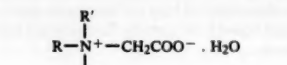
4,279,891

LOW ALCOHOL CONTENT AFTER-SHAVE LOTION

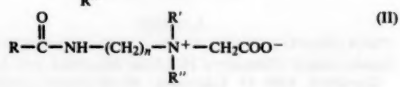
Herbert W. Henkel, East Hanover, and Mary R. Paradiso, Clifton, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Continuation of Ser. No. 10,198, Feb. 8, 1979, abandoned, which is a continuation of Ser. No. 863,564, Dec. 22, 1977, abandoned. This application Dec. 13, 1979, Ser. No. 102,724
Int. Cl.[3] A61K *7/15, 7/42*
U.S. Cl. 424—73 4 Claims

1. A clear, non-oily, non-greasy, low-sting aqueous alcoholic after-shave lotion consisting essentially of at least about 66 percent by weight water and from about 15 to 20 percent by weight ethanol; from about 0.25 to 3.75 percent by weight of a perfume compound which is insoluble in said aqueous alcohol solution; and from about 2 to 8 percent by weight of propylene glycol; and, as a solubilizer for said perfume compound (A), an amphoteric betaine surfactant selected from the group consisting of compounds represented by (I) and (II):

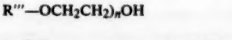


(I)



(II)

wherein R is a saturated or unsaturated C_{12} to C_{18} alkyl group; R′ and R″ are C_1 to C_4 alkyl groups; n is an integer from 1 to 6; and (B) an ethoxylated fatty alcohol represented by (III):



wherein R‴ represents a saturated or unsaturated C_{12} to C_{18} alkyl group and n has an average value of about 10 to 20; the weight ratio of said perfume compound to said amphoteric betaine in said lotion being from about 2/1 to 4.6/1, and the weight ratio of said perfume compound to said ethoxylated fatty acid being from about 1/1 to 3/1.

4,279,892

ORGANOGERMANIUM INDUCTION OF INTERFERON PRODUCTION

Nakao Ishida, Sendai; Hiroshi Satoh, Tokyo; Fujio Suzuki, Sendai, and Kouhei Miyao, Tokyo, all of Japan, assignors to Asai Germanium Research Institute, Tokyo, Japan

Filed Mar. 13, 1980, Ser. No. 129,997
Claims priority, application Japan, Mar. 15, 1979, 54/30297
Int. Cl.[3] A61K *45/02, 39/00*
U.S. Cl. 424—85 4 Claims

1. A method for therapeutically inducing interferon production in living animal cells, comprising subjecting said cells to the species-specific interferon inducing effect of an effective

amount of an organogermanium compound having the formula:

$$(GeCH_2CH_2COX)_2O_3$$

wherein X is selected from the group consisting of —OH, —NH_2 and —O—alkyl.

4,279,893

VACCINE AGAINST NEWCASTLE FOWL DISEASE, METHOD FOR PREPARING AND USE THEREOF

July K. Kreimer, Yantarny proezd, 33, kv. 28, and Ljubov S. Ageeva, ulitsa Korneichuka, 52, kv. 1, both of Moscow, U.S.S.R.

Filed Sep. 8, 1980, Ser. No. 184,933
Claims priority, application U.S.S.R., Oct. 29, 1979, 2833299
Int. Cl.³ A61K *39/155, 39/17*
U.S. Cl. 424—89 **12 Claims**

1. A vaccine against Newcastle fowl disease comprising a virus-containing extra-embryonic liquid of a lentogenic strain Paramyxovirus a-1 "Bor-74 VGNKI" deposited at the All-Union State Research and Control Institute for Veterinary Preparations of the USSR Ministry of Agriculture and having its biological activity within the range of from 10^8 to $10^{9.75}$ EID_{50}/ml.

4,279,894

STREPTOMYCES METABOLITE

David H. Davies, Macclesfield, and Geoffrey L. F. Norris, Sandbach, both of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Jul. 25, 1979, Ser. No. 60,682
Claims priority, application United Kingdom, Aug. 3, 1978, 32172/78
Int. Cl.³ A61K *35/00*
U.S. Cl. 424—122 **6 Claims**

1. The compound M.139603 which has the following characteristics:

(a) molecular formula $C_{35}H_{53}O_8Na$ as indicated by mass spectrometry, which shows a molecular ion, M^+, of mass 624.361 (calculated for $C_{35}H_{53}O_8Na$=624.364), and by elementary analysis; C=67.5, H=8.8%, (calculated for $C_{35}H_{53}0_8.Na$—C=67.3, H=8.5%);

(b) infra-red spectrum in nujol mull, as shown in FIG. 1, containing characteristic absorptions at 3300, 1725, 1645, 1565 and 915 $cm.^{-1}$;

(c) proton magnetic resonance spectrum in deuteriochloroform as shown in FIG. 2;

(d) ultra-violet spectrum in methanol solution shows a characteristic absorption at 234 nm (ϵ=12900) and 272 nm (ϵ=10800);

(e) melting point 176°–178° C.;

(f) $[\alpha]_D^{23} = -82°$ (c=0.2 in methanol);

and the corresponding "free acid" form thereof of the molecular formula $C_{35}H_{54}O_8$, characterised by R_F=0.55 (approximately) on thin layer chromatography on silica gel (Merck's "Kieselgel 60F-254"—trade mark), 0.25 mm, thickness, developed with a mixture of diethyl ether, methanol and formic acid in the proportion 95:4:1 by volume; UV in ethanol 274 nm (ϵ=13900), broad;

or other alkali metal salts which can be derived therefrom.

4,279,895

INSECTICIDAL NATURAL BAIT COMPOSITION AND METHOD OF USING SAME

Arthur Carle, 3390 rue Simard, St-Hubert, Quebec, Canada (J3Y 6T4)

Filed Jul. 13, 1979, Ser. No. 57,436
Int. Cl.³ A01N *59/00*
U.S. Cl. 424—127 **7 Claims**

1. An insecticidal natural bait comprising:

(a) between about 75 and about 95 percent by weight of humidified diatomaceous silica having a particle size of at most 50 microns;

(b) between about 5 and about 25 percent by weight of lumolinine;

(c) said composition being humidified to contain about 1 to about 25 percent by weight water enable it to be swallowed by an insect and to prevent said lumolinine from being washed away from said composition.

7. An insecticidal method which comprises contacting insects with a composition as defined in claim 1.

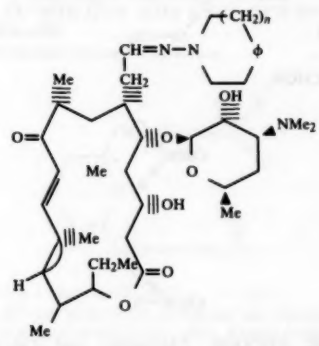
4,279,896

NOVEL 20-IMINO MACROLIDE ANTIBACTERIAL AGENTS

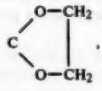
Ashit K. Ganguly, Upper Montclair, and Yi-Tsung Liu, Morris County, both of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Filed Jun. 23, 1980, Ser. No. 161,947
Int. Cl.³ A61K *31/71;* **C07H** *17/08*
U.S. Cl. 424—180 **57 Claims**

1. A compound of the formula:



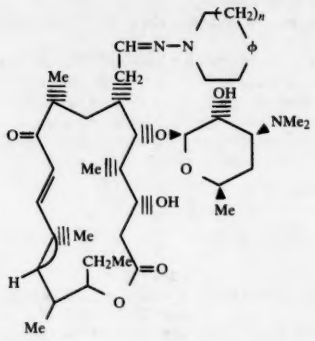
Wherein D, bridging positions 12 and 13 represents a double bond or an oxirane ring; Q is a member of the group consisting of CH_2, CRR_1, NH, NR, O, S, SO_2,



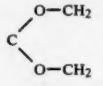
CHOH, CHOR, $CROR_1$,

CHCOOH, CHCOOR, $CHCONH_2$, and $CHCONRR_1$; R and R_1 may be the same or different, each being a member of the group consisting of (C_1–C_8) alkyl, (C_7–C_{10}) aralkyl and (C_6–C_{10}) aryl including X-substituted aryl and aralkyl, wherein X is a member of the group consisting of halogen, trifluoromethyl, (C_1–C_5) alkoxy, and (C_1–C_5) alkylcarbonyl; and n is an integer of the group consisting of 0, 1 and 2.

48. A method of eliciting an antibacterial response in a mammal having a bacterial infection which comprises administering to the mammal a therapeutically effective quantity of a compound of the formula:



Wherein D bridging positions 12 and 13 represents a double bond or an oxirane ring; Q is a member of the group consisting of CH_2, CRR_1, NH, NR, O, S, SO_2,



CHOH, CHOR,

CROR,

CHCOOH, CHCOOR, $CHCONH_2$, and $CHCONRR_1$; Wherein R and R_1 may be the same or different, each being a member of the group consisting of (C_1–C_8) alkyl, (C_7–C_{10}) aralkyl and (C_6–C_{10}) aryl including X-substituted aryl and aralkyl wherein X is a member of the group consisting of halogeno, trifluoromethyl, (C_1–C_5) alkoxy and (C_1–C_5) alkylcarbonyl, and N is an integer of the group consisting of 0, 1 and 2.

4,279,897

(ALKOXYCARBONYL)(ALKYL)AMINOSULFENYL DERIVATIVES OF PHOSPHORAMIDOTHIOATE ESTERS

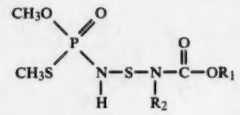
Mohamed A. H. Fahmy, and Tetsuo R. Fukuto, both of Riverside, Calif., assignors to The Regents of the University of California, Los Angeles, Calif.

Filed Mar. 7, 1979, Ser. No. 18,415

Int. Cl.[3] **A01N** *57/30;* **C07F** *9/24*

U.S. Cl. 424—211 **19 Claims**

1. N-[(alkoxycarbonyl)(alkyl)aminosulfenyl]phosphoramidothioates of the formula



where R_1 is alkyl containing from 1 to 12 carbon atoms and R_2 is alkyl containing 2 to 8 carbon atoms.

13. The method of controlling insects which comprises applying to the sites of infestation an insecticidally effective amount of a compound as defined in claim **1**.

4,279,898

IN VIVO INHIBITORS OF CHOLESTEROL BIOSYNTHESIS

Robert R. Engel, Carle Place; Virender K. Sarin, New York; Barry Gotlinksy, Bronx; Burton E. Tropp, Manhasset Hills, and Thomas S. Parker, New York, all of N.Y., assignors to Research Foundation of the City University of New York, New York, N.Y.

Filed Apr. 22, 1980, Ser. No. 142,631

Int. Cl.[3] **A01N** *57/00, 45/00*

U.S. Cl. 424—217 **6 Claims**

1. Dialkyl 5-carbo[etiocholane-3′α,7′α,12′α-trihydroxy-17′β (1″ methyl-4″ butyl]oxy-4-hydroxy-4-methylpentyl-1-phosphonate wherein the alkyl group contains 1 to 8 carbon atoms.

6. The use of diethyl 5-carbohexadecyloxy-4-hydroxy-4-methylpentyl-1-phosphonate for the inhibition of cholesterol synthesis in rat liver cells.

4,279,899

BENZYLPYRIMIDINES, PROCESSES FOR THEIR MANUFACTURE, AND DRUGS CONTAINING THE SAID COMPOUNDS

Klaus Gutsche, Rellingen; Peter Scharwaechter; Wilhelm Kohlmann, both of Moorege, and Gerd Kroemer, Elmshorn, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

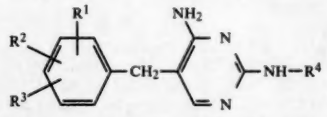
Filed Jun. 27, 1978, Ser. No. 919,505

Claims priority, application Fed. Rep. of Germany, Jul. 6, 1977, 2730467

Int. Cl.[3] **A61K** *31/505;* **C07D** *237/20;* **A61K** *31/535;* **C07D** *237/49*

U.S. Cl. 424—229 **7 Claims**

1. A benzylpyrimidine of the formula



where R^1, R^2, and R^3, which may be identical or different, are in the 3-, 4-, and 5-positions of the benzene ring, and each may be selected from the group consisting of hydrogen, methyl, methoxy or chlorine, and R^4 is methyl which is substituted by alkoxy of 1 to 6 carbon atoms, wherein the alkyl may additionally be substituted by a chlorine atom or an alkoxy group of 1 or 2 carbon atoms which in turn may be substituted by alkoxy of 1 to 4 carbon atoms, or by allyloxy, cyclohexoxy, or benzyloxy, or R^4 is allyl or alkyl of 1 to 3 carbon atoms which is substituted by phenyl, chlorophenyl, hydroxyl, alkoxy of 1 or 2 carbon atoms, dialkylamino (where alkyl is of 1 or 2 carbon atoms), pyrrolidino or morpholino, or R^4 is 3-alkylisoxazolyl-5-methyl, wherein the alkyl is 1 to 4 carbon atoms.

7. An antimicrobial active composition consisting essentially of a benzylpyrimidine according to claim **1**, with or without a

sulfoamide, and a non-toxic pharmaceutically acceptable solid or liquid carrier.

4,279,900

PRODRUGS FOR THE IMPROVED DELIVERY OF HALOGEN-CONTAINING GLUCOCORTICOSTEROIDS

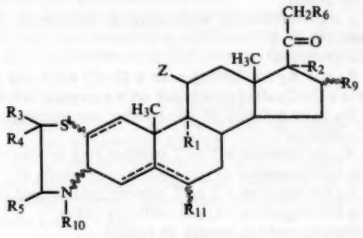
Nicholas S. Bodor, Gainesville, Fla., and Kenneth B. Sloan, Eudora, Kans., assignors to Intrex Research Corporation, Lawrence, Kans.

Continuation-in-part of Ser. No. 924,304, Jul. 13, 1978, abandoned. This application Jul. 27, 1979, Ser. No. 61,177

Int. Cl.³ A61K *3/58*

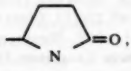
U.S. Cl. 424—241 **67 Claims**

1. A compound having the structural formula



(I)

wherein R_1 and R_{11} are each H, F or Cl, with the proviso that R_1 and R_{11} cannot simultaneously be H; R_2 is OH, $—OCOC_7$, $—OCOC_8$ or C_1–C_{10} alkyl; R_3 and R_4 may be the same or different and are each H or C_1–C_8 alkyl; R_5 is H or $—COOR_7$; R_6 is OH, F, Cl, Br or $—OCOR_8$; R_7 is H, C_1–C_{20} alkyl, C_2–C_{20} alkenyl, C_5–C_7 cycloalkyl, C_5–C_7 cycloalkyl-C_6–C_{10} aryl, phenyl or C_1–C_4 alkylsubstituted phenyl; R_8 is C_1–C_{20} alkyl, C_2–C_{20} alkenyl, C_5–C_7 cycloalkyl, C_5–C_7 cycloalkyl-C_6–C_{10} aryl, phenyl, C_1–C_4 alkyl-substituted phenyl, $—(CH_2)_nCOOH$ wherein n is an integer of 1 to 5, or $—(CH_2)_nCON(R_7)_2$ wherein n and R_7 are defined as above, or R_8 is



or a 2, 3 or 4 pyridyl, wherein at least one of the hydrogen atoms therein can be replaced by a member selected from the group consisting of $—N(R_4)_2$, $—CON(R_4)_2$, $—SOR_4$, a halogen atom (Cl, Br, I), $—COOR_4$, $—COOCH_2N(R_4)_2$ and $—COOCH_2—S—R_4$, wherein R_4 is defined above; R_9 is H, C_1–C_8 alkyl, F, Cl or OH; or R_2 and R_9 may be combined to form a cyclic ketal of the formula

wherein R_3 and R_7 are defined as above; R_{10} is H, $—COR_7$ or $—COOR_7$ wherein R_7 is defined as above, with the proviso that when R_{10} is H, then the compound of formula (I) can be in the form of a pharmaceutically acceptable acid addition salt; Z is =O, β—OH or β—$OCOR_7$ wherein R_7 is defined as above; the dotted line at the 1(2)-position indicates the presence of an optional double bond; the dotted lines at the 4(5) and 5(6) positions indicate the presence of a double bond at either the 4(5) or the 5(6) position; and the wavy lines indicate the α or β configuration.

66. A pharmaceutical composition of matter useful in alleviating inflammation in or on a warm-blooded animal which comprises an anti-inflammatory effective amount of a compound as defined by claim 1, in combination with a nontoxic pharmaceutically acceptable oral or topical inert carrier therefor.

4,279,901

TOPICAL OINTMENT

Ronald M. Kudla, New York, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Filed Dec. 31, 1979, Ser. No. 109,017

Int. Cl.³ A61K *31/58*

U.S. Cl. 424—241 **1 Claim**

1. An ointment which is essentially non-oxidizing and essentially non-aqueous for topical application of medicament, such ointment comprising from 0.5 to 5 weight percent of ethylene carbonate, polawax and white petrolatum in an amount that forms a total of 100 weight percent in the presence of an active medicament wherein the active medicament is 16α,17α-cyclopentylidenedioxy-9α-fluoro-11α,21-dihydroxy-1,4-pregnadiene-3,20-dione-21-acetate.

4,279,902

ANTI-ARRHYTHMIA AGENTS

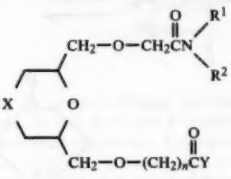
Frederic P. Hauck, Bridgewater, and Glenn A. Jacobs, Princeton, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Aug. 6, 1980, Ser. No. 175,626

Int. Cl.³ A61K *31/34, 31/35, 31/335;* C07D *307/24*

U.S. Cl. 424—246 **11 Claims**

1. A compound having the structure



wherein X is a single bond, $—CH_2—$ or —O—,

R^1 and R^2 may be the same or different and are lower akyl, lower alkenyl, phenyl lower alkyl, phenyl-lower alkoxy-lower alkyl, or lower alkoxy or

may be taken together to form a 5- to 7-membered saturated heterocyclic ring optionally containing one other hetero atom, which is nitrogen, oxygen, or sulfur,

Y is hydroxyl, OR or

wherein R is lower alkyl, lower alkenyl, or lower alkanoyl and R^1, R^2 and

are as defined above, with the proviso that where both

and Y are heterocycles, they are the same heterocycle, and n is an integer from 1 to 6, and when Y=OH, pharmaceutically acceptable base addition salts thereof.

11. A method for treating arrhythmia in mammals which comprises administering to a mammalian host an anti-arrhythmia effective amount of a compound as defined in claim 1.

4,279,903
DIPHYDROTHIAZINE DERIVATIVES

Martin Anderson, Whitstable, and Roger E. Woodall, Sittingbourne, both of England, assignors to Shell Oil Company, Houston, Tex.

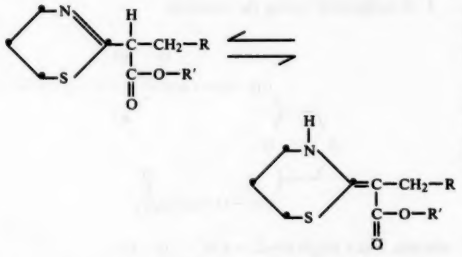
Filed May 20, 1980, Ser. No. 151,569

Claims priority, application United Kingdom, May 23, 1979, 17981/79; European Pat. Off., Apr. 17, 1980, 80200351.7

Int. Cl.³ A01N *43/86;* **C07D** *279/06*

U.S. Cl. 424—246 **6 Claims**

1. A tautomeric compound represented by the formulae:



wherein R is thienyl or furyl, or one of these substituted by alkyl of from one to six carbon atoms, and R^1 contains from one to ten carbon atoms, and is alkyl, alkenyl, alkynyl, cycloalkyl, or cycloalkylalkyl or one of these substituted by alkoxy or halogen, or is phenyl or benzyl, or one of these substituted by alkyl, alkoxy, halogen, haloalkyl, amino, alkylamino, dialkylamino, or nitro, and the pharmacologically acceptable acid-addition salts thereof.

6. A method for controlling helminths in an animal which comprises orally administering to an infested animal an anthelmintically effective dosage of a compound of claim 3.

4,279,904
3-AMINO-1-BENZOXEPINE DERIVATIVES AND THEIR SALTS AND PHARMACEUTICAL COMPOSITIONS THEREOF

Heinrich-Wilhelm Ohlendorf, Hanover; Klaus-Ullrich Wolf, Haenigsen; Wilhelm Kaupmann, Hannover-Kirchrode, and Henning Heinemann, Hanover, all of Fed. Rep. of Germany, assignors to Kali-Chemie Pharma GmbH, Hanover, Fed. Rep. of Germany

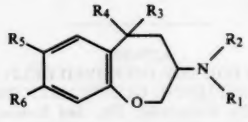
Filed Jul. 28, 1980, Ser. No. 173,075

Claims priority, application Fed. Rep. of Germany, Aug. 2, 1979, 2931399

Int. Cl.³ A61K *31/335;* **C07D** *313/08*

U.S. Cl. 424—246 **9 Claims**

1. 3-amino-1-benzoxepine derivatives of the following Formula I:



I

wherein:

R_1 and R_2 independently of one another are
hydrogen,
C_1–C_5 alkyl,
C_1–C_5 alkyl substituted with a terminal phenyl, or a phenyl containing one or two halogens, methyl or methoxy groups, a 3,4-methylenedioxy or a 3,4-ethylenedioxy group,
C_2–C_5 alkyl substituted with terminal hydroxy or methoxy or,
C_3–C_4 alkenyl; or

one of R_1 and R_2 are hydrogen or a C_1–C_5 alkyl and the other is a C_2–C_5 alkyl substituted with a terminal NR_7R_8;

R_7 and R_8 independently of one another are hydrogen or C_1–C_5 alkyl; or

R_7 and R_8 are together a 5 to 7 member ring or said ring having heterogeneous oxygen, sulfur or nitrogen, or

R_1 and R_2 are together a 5 to 7 member ring or said ring having heterogeneous oxygen, sulfur or NR_9;

R_9 is hydrogen, methyl, benzyl, or phenyl;

one of R_3 and R_4 is hydrogen and the other hydroxy, or R_3 and R_4 together are oxygen;

R_5 and R_6 independently of one another are hydrogen, halogen, C_1–C_4 alkyl, C_1–C_4 alkoxy or C_1–C_4 alkylthio; or

one of R_5 and R_6 is trifluoromethyl or nitro and the other is hydrogen; the stereo isomers and the acid addition salts thereof.

9. A method of treating motility disorders of the gastrointestinal tract comprising administering an effective amount of 3-amino-1-benzoxepine derivative of claim 1.

4,279,905
1-BENZOXEPIN-5 (2H)-ONE DERIVATIVES AND PHARMACEUTICAL COMPOSITIONS

Heinrich-Wilhelm Ohlendorf, Hanover; Klaus-Ullrich Wolf, Haenigsen, and Wilhelm Kaupmann, Hannover-Kirchrode, all of Fed. Rep. of Germany, assignors to Kali-Chemie Pharma GmbH, Hanover, Fed. Rep. of Germany

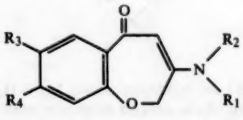
Filed Jul. 28, 1980, Ser. No. 173,076

Claims priority, application Fed. Rep. of Germany, Aug. 2, 1979, 2931398

Int. Cl.³ A61K *31/335;* **C07D** *313/08*

U.S. Cl. 424—246 **9 Claims**

1. 3-amino-1-benzoxepin-5(2H)-one derivatives of the following Formula I



I

wherein:

R_1 and R_2 independently of one another are
hydrogen,
C_1–C_5 alkyl,
C_1–C_5 alkyl substituted with a terminal phenyl, or a phenyl containing one or two halogens, methyl or methoxy groups, a 3,4-methylenedioxy or a 3,4-ethylenedioxy group,
C_2–C_5 alkyl substituted with terminal hydroxy or methoxy or,
C_3–C_4 alkenyl; or

one of R_1 and R_2 are hydrogen or a C_1–C_5 alkyl and the other is a C_2–C_5 alkyl substituted with a terminal NR_5R_6;

R_5 and R_6 independently of one another are hydrogen or C_1–C_5 alkyl; or

R_5 and R_6 are together a 5 to 7 member ring, or

R_5 and R_6 are together a 5 to 7 member ring having heterogeneous oxygen, sulfur or nitrogen;

R_1 and R_2 are together a 5 to 7 member ring, or

R_1 and R_2 are together a 5 to 7 member ring having heterogeneous oxygen, sulfur or NR_7;

R_7 is hydrogen, methyl, benzyl or phenyl;

R_3 and R_4 independently of one another are hydrogen, halogen, C_1–C_4 alkyl, C_1–C_4 alkoxy or C_1–C_4 alkylthio; or

one of R_3 and R_4 is trifluoromethyl or nitro and the other is hydrogen;

and the acid addition salts thereof.

9. A method of treating motility disorders of the gastrointestinal tract comprising administering an effective amount of 3-amino-1-benzoxepin-5(2H)-one derivative of claim 1.

4,279,906
INDOMETHACIN-ANTIHISTAMINE COMBINATION FOR GASTRIC ULCERATION CONTROL

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; Patricia A. Brown, Menlo Park, and Joan V. Danellis, Cupertino, both of Calif.

Filed Nov. 10, 1977, Ser. No. 850,504
Int. Cl.³ A61K *31/40, 31/54, 31/445*
U.S. Cl. 424—247 **8 Claims**

4. The process of claim 1 wherein there is administered about 0.025 to 0.400 gram of indomethacin and from about 0.2 to 2.0 grams of the antihistamine.

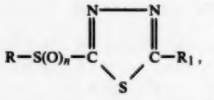
4,279,907
1,3,4-THIADIAZOLE-2-CARBOXYLIC ACID DERIVATIVES, PROCESS FOR MAKING THE SAME AND FUNGICIDAL AND NEMATOCIDAL COMPOSITIONS CONTAINING SAME

Ludwig Nüsslein; Dietrich Baumert, and Ernst A. Pieroh, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

Division of Ser. No. 101,061, Dec. 6, 1979. This application Jun. 6, 1980, Ser. No. 157,635
Claims priority, application Fed. Rep. of Germany, Dec. 7, 1978, 2853196
Int. Cl.³ A01N *43/82, 43/84*
U.S. Cl. 424—248.51 **1 Claim**

1. A composition having fungicidal and nematocidal activity comprising as active agent

1,3,4-thiadiazole-2-carboxylic acid derivatives of the formula



I

wherein

R is C_1–C_6-alkyl, C_2–C_6-Alkenyl, C_2–C_6-Alkinyl or C_3–C_6-Cycloalkyl,

R_1 is C_1–C_6-alkoxycarbonyl, aminocarbonyl, C_1–C_8-alkylaminocarbonyl, C_3–C_6-cycloalkylaminocarbonyl, di-C_1–C_8 alkylaminocarbonyl, cyclohexylmethylaminocarbonyl, methoxy-C_2–C_3-alkylaminocarbonyl, morpholinocarbonyl, pyrrolidinocarbonyl, piperidinocarbonyl or cyano,

and n is 0, 1 or 2,

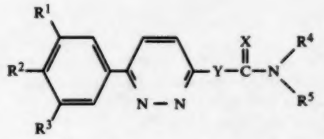
in an amount of about 1 to 95% by weight and a liquid or solid carrier material in an amount of about 99 to 5% by weight which carrier material may be replaced in an amount up to 20% by weight by a surface active agent.

4,279,908
PYRIDAZINE DERIVATIVES AND THEIR USE AS AGRICULTURAL FUNGICIDES

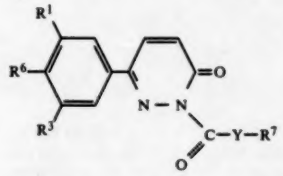
Teruomi Jojima; Hideo Takeshiba, both of Hiromachi, and Yukiyoshi Takahi, Shiga, all of Japan, assignors to Sankyo Company Limited, Tokyo, Japan

Filed Apr. 7, 1980, Ser. No. 137,779
Claims priority, application Japan, Apr. 19, 1979, 54-48209; Apr. 19, 1979, 54-48210
Int. Cl.³ A01N *47/16, 47/18;* C07D *237/14, 413/12*
U.S. Cl. 424—248.55 **24 Claims**

1. Compounds of formulae (Ia) and (Ib):



(Ia)

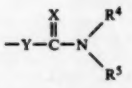


(Ib)

wherein:

R^1 and R^3 are the same or different and each represents a halogen atom, or one of R^1 and R^3 represents a halogen atom and the other represents a hydrogen atom;

R^2 represents a hydrogen atom, an alkyl group, an alkoxy group, a halogen atom or a group of formula



wherein R^4, R^5, X and Y are as defined below);

R^4 and R^5 are the same or different and each represents an alkyl group, a phenyl group, a phenyl group having one or more substituents selected from halogen atoms and lower alkyl groups, a benzyl group or a benzyl group having one or more substituents selected from halogen atoms and lower alkyl groups in its aromatic ring; or

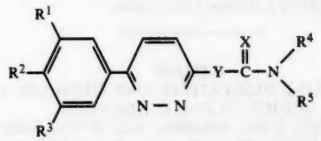
R^4 and R^5, together with the nitrogen atom to which they are attached, represent an optically substituted nitrogen-containing heterocyclic ring;

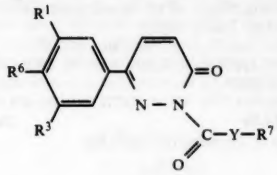
R^6 represents a hydrogen atom, an alkyl group, an alkoxy group or a halogen atom;

R^7 represents an alkyl group, a phenyl group, a phenyl group having one or more substituents selected from halogen atoms and lower alkyl groups, a benzyl group or a benzyl group having one or more substituents selected from halogen atoms and lower alkyl groups in the aromatic ring; and

X and Y, which are the same or different, each represents an oxygen atom or a sulphur atom.

9. A fungicidal composition comprising, as active ingredient an effective amount of a compound of formula (Ia) or (Ib) in admixture with an agriculturally or horticulturally acceptable carrier or diluent:

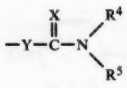

(Ia)


(Ib)

wherein:

R^1 and R^3 are the same or different and each represents a halogen atom, or one of R^1 and R^3 represents a halogen atom and the other represents a hydrogen atom;

R^2 represents a hydrogen atom, an alkyl group, an alkoxy group, a halogen atom or a group of formula



(wherein R^4, R^5, X and Y are as defined below);

R^4 and R^5 are the same or different and each represents an alkyl group, a phenyl group, a phenyl group having one or more substituents selected from halogen atoms and lower alkyl groups, a benzyl group or a benzyl group having one or more substituents selected from halogen atoms and lower alkyl groups in its aromatic ring; or

R^4 and R^5, together with the nitrogen atom to which they are attached, represent an optionally substituted nitrogen-containing heterocyclic ring;

R^6 represents a hydrogen atom, an alkyl group, an alkoxy group or a halogen atom;

R^7 represents an alkyl group, a phenyl group, a phenyl group having one or more substituents selected from halogen atoms and lower alkyl groups, a benzyl group or a benzyl group having one or more substituents selected from halogen atoms and lower alkyl groups in the aromatic ring; and

X and Y, which are the same or different, each represents an oxygen atom or a sulphur atom.

4,279,909

ANTIALLERGIC METHOD

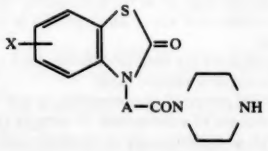
Toshiyuki Takashima, Nagaoka, Japan, assignor to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Filed Feb. 13, 1980, Ser. No. 121,039

Int. Cl.³ A61K *31/495*

U.S. Cl. 424—250 **5 Claims**

1. A method for treating allergic diseases in mammals which comprises administering an antiallergic amount of a compound of the formula:



wherein A is lower alkylene and X is halogen, or a phamaceutically acceptable salt thereof, to said mammals.

4,279,910

QUINAZOLINE THERAPEUTIC AGENTS

Simon F. Campbell, Deal, England, assignor to Pfizer Inc., New York, N.Y.

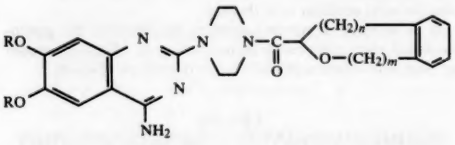
Filed Apr. 15, 1980, Ser. No. 140,534

Claims priority, application United Kingdom, Apr. 25, 1979, 14431/79

Int. Cl.³ A61K *31/505;* **C07D** *403/04*

U.S. Cl. 424—251 **7 Claims**

1. A compound of the formula:



and the pharmaceutically acceptable acid addition salts thereof, wherein R is alkyl having from one to four carbon atoms; and m and n are each zero, one or two, with the proviso that m plus n always equals one or two and when m is zero, n is 2.

7. A pharmaceutical composition suitable for oral or parenteral administration comprising a pharmaceutically acceptable carrier and an effective antihypertensive amount of a compound as claimed in claim 1.

4,279,911

AMINE DERIVATIVES AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Michael Martin-Smith; Barry J. Price, both of Hertford; John Bradshaw, Ware, and John W. Clitherow, Sawbridgeworth, all of England, assignors to Glaxo Group Limited, London, England

Division of Ser. No. 970,534, Dec. 18, 1978, Pat. No. 4,233,302. This application Jun. 6, 1980, Ser. No. 157,203

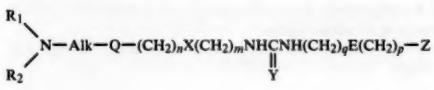
Claims priority, application United Kingdom, Dec. 23, 1977, 53716/77; Nov. 16, 1978, 44778/78

Int. Cl.³ A61K *31/34, 31/44;* **C07D** *213/58, 307/54*

U.S. Cl. 424—251 **7 Claims**

1. A compound of the formula (I)

(I)



or a physiologically acceptable salt, N-oxide, or hydrate thereof, in which

Y represents =O, =S, =CHNO$_2$ or =NR$_3$ where R$_3$ represents hydrogen, nitro, cyano, lower alkyl, aryl, lower alkyl sulphonyl or aryl sulphonyl;

R$_1$ and R$_2$, which may be the same or different each represent hydrogen, lower alkyl, cycloalkyl, lower alkenyl, aralkyl, hydroxy, lower trifluoroalkyl, lower alkyl substituted by hydroxy, lower alkoxy, amino, lower alkylamino or lower dialkylamino, or R$_1$ and R$_2$ together with the nitrogen atom to which they are attached form a pyrrolidine or piperidine ring;

Q represents a benzene ring in which incorporation into the rest of the molecule is through bonds at the 1- and 3- or 1- and 4-positions;

X represents —CH$_2$—, —O— or —S—;

n represents zero, 1 or 2;

m represents 2, 3 or 4;

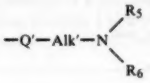
Alk represents a straight chain alkylene group of 1 to 3 carbon atoms;

q represents 2, 3 or 4 or can additionally represent zero or 1 when E is a $-CH_2-$ group;

p represents zero, 1 or 2;

E represents $-CH_2-$, $-O-$ or $-S-$; and

Z represents a phenyl ring optionally substituted by at least one of lower alkyl, hydroxy, lower alkyl hydroxy, amino, lower alkoxy or halo or a furyl, thienyl, pyridyl, imidazolyl, thiazolidinyl, oxazolidinyl or pyrimidinyl ring optionally substituted by lower alkyl optionally substituted by hydroxy or halo or Z represents the group



where Q' represents a benzene ring in which incorporation into the rest of the molecule is through bonds at the 1- and 3-positions or 1- and 4-positions; Alk' represents any of the groups defined for Alk; and R_5 and R_6, which may be the same or different, each represent any of the groups defined for R_1 and R_2; except that p is not zero when E is oxygen and Z is a furan or thiophen ring system.

7. A method of treating a condition mediated through histamine H_2-receptors which comprises administering to a patient an effective amount of a compound as defined in claim **1** to relieve said condition.

4,279,912

NOVEL IMIDAZOQUINOLINES

Ian R. Ager, and Peter J. Ramm, both of Swindon, England, assignors to Roussel Uclaf, Paris, France

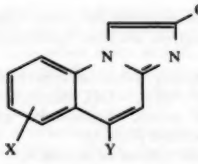
Filed Jan. 16, 1978, Ser. No. 869,842

Claims priority, application United Kingdom, Jan. 20, 1977, 2377/77

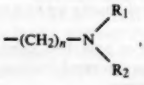
Int. Cl.³ A61K *31/47;* **C07D** *471/14*

U.S. Cl. 424—258 **24 Claims**

1. A compound selected from the group consisting of a compound of the formula



wherein Y is hydrogen, X is selected from the group consisting of hydrogen, halogen and alkoxy of 1 to 5 carbon atoms, Z is selected from the group consisting of hydrogen, alkyl of 1 to 5 carbon atoms, alkyl, of 1 to 5 carbon atoms substituted with two hydroxyls or protected hydroxyls and



n is an integer from 1 to 6 and R_1 and R_2 are individually alkyl of 1 to 5 carbon atoms and taken together with the nitrogen to which they are attached form a heterocyclic ring selected from the group consisting of pyrrolidino, piperidino, morpholino, piperazinyl, N-methyl-piperazinyl, N-ethyl-piperazinyl, N-propyl-piperazinyl and N-butyl-piperazinyl and non-toxic, pharmaceutically acceptable salts thereof.

8. An antiallergic and bronchodilatory composition comprising an antiallergically and bronchodilatory effective amount of at least one compound of claim **1** and an inert pharmaceutical carrier.

12. A method of relieving allergic symptoms in warm-blooded animals comprising administering to warm-blooded animals on antiallergically effective amount of a compound of claim **1**.

4,279,913

POLYSUBSTITUTED-2-(3-LOWERALKYLAMINO-2-R_1O-PROPOXY)PYRIDINES

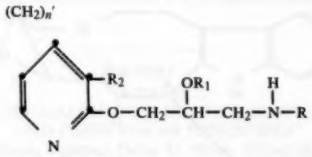
John J. Baldwin, and Gerald S. Ponticello, both of Lansdale, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 866,961, Jan. 4, 1978, abandoned. This application Jan. 29, 1979, Ser. No. 7,092

Int. Cl.³ C07D *215/20, 221/04;* **A61K** *31/44, 31/47*

U.S. Cl. 424—258 **9 Claims**

1. A compound having the formula



I

wherein

n' is 3 or 4,

R is C_3-C_4 branched alkyl,

R_1 is H or

wherein L is selected from C_1-C_{10} alkyl, phenyl and substituted phenyl having up to two substituents which are independently selected from C_1-C_4 alkyl, C_1-C_4 alkoxy and halo, and

R_2 is CN,

and pharmaceutically acceptable salts thereof.

8. A pharmaceutical composition for effecting β-adrenergic blockade containing an effective amount of a compound of claim **1** and a diluent.

4,279,914

THROMBOCYTE AGGREGATION INHIBITING COMPOSITION AND METHODS

Alfred G. Maasböl, Hamburg, Fed. Rep. of Germany, and Alexander K. Sim, Falkirk, Scotland, assignors to Hermann Gottfried Schnabel Fa. and Karl O. Helm, both of Hamburg, Fed. Rep. of Germany

Continuation of Ser. No. 895,717, Apr. 12, 1978, abandoned. This application Aug. 7, 1979, Ser. No. 64,540

Claims priority, application Fed. Rep. of Germany, Apr. 18, 1977, 2717001

Int. Cl.³ A61K *31/47, 31/485*

U.S. Cl. 424—258 **5 Claims**

1. A method for inhibiting platelet aggregation, which comprises administering to a patient in need of such treatment a composition comprising a physiologically acceptable solid or aqueous liquid carrier and a platelet aggregation inhibiting amount of at least one active compound selected from the group consisting of:

(a) tetrahydroxyaporphine,

(b) glaucine containing 50 to 100% l-glaucine, and

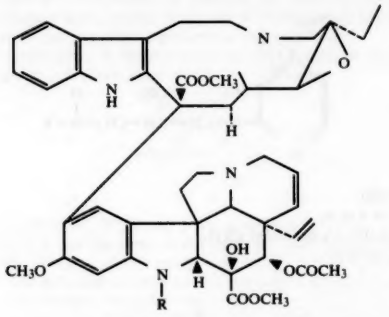
(c) the physiologically acceptable salts and N-alkyl ammonium salts of said compounds.

4,279,915
METHOD OF TREATMENT USING NEW LEUROSINE DERIVATIVES

Karola Jovanovics; Kalman Szasz; Bela Kellner; Laszlo Nemeth; Zsuzsa Relle; Emil Bittner; Eszter Deszeri, and Janos Eles, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar Rt., Budapest, Hungary

Continuation-in-part of Ser. No. 422,100, Dec. 5, 1973, Pat. No. 4,189,432. This application Nov. 17, 1976, Ser. No. 742,463
Claims priority, application Hungary, Feb. 16, 1973, RI 502
The portion of the term of this patent subsequent to Jun. 2, 1998, has been disclaimed.
Int. Cl.[3] A61K *31/475*
U.S. Cl. 424—262 **3 Claims**

1. A method of treating leukemia, lymphomas or Hodgkin's disease in human patients comprising administering to a human patient a cytostatically effective amount of a compound effective amount of a compound of the formula I,



wherein R is formyl, or a pharmaceutically acceptable acid addition salt thereof.

4,279,916
METHOD OF TREATMENT USING NEW LEUROSINE DERIVATIVES

Karola Jovanovics; Kalman Szasz; Bela Kellner; Laszlo Nemeth; Zsuzsa Relle; Emil Bittner; Eszter Deszeri, and Janos Eles, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar Rt., Budapest, Hungary

Continuation-in-part of Ser. No. 742,463, Nov. 17, 1976, which is a continuation-in-part of Ser. No. 422,100, Dec. 5, 1973, Pat. No. 4,189,432. This application Sep. 20, 1977, Ser. No. 834,871
Claims priority, application Hungary, Feb. 16, 1973, RI 502
Int. Cl.[3] H61K *31/475*
U.S. Cl. 424—262 **1 Claim**

1. A method of treating multiple myeloma in a human patient susceptible to treatment comprising administering to a human patient susceptible to treatment a cytostatically effective amount of N-formyl-leurosine or N-formyl-leurosine sulfate.

4,279,917
AMINO ACID SOLUTION FOR INTRAVENOUS NUTRITION

Toru Takami, Yokosuka, and Yuriko Yonekawa, Kashiwa, both of Japan, assignors to Ajinomoto Company, Incorporated, Tokyo, Japan

Filed Sep. 5, 1979, Ser. No. 72,670
Claims priority, application Japan, Sep. 8, 1978, 53-110892
Int. Cl.[3] A61K *31/415, 31/40, 31/195*
U.S. Cl. 424—273 R **3 Claims**

1. An amino acid based nutritional solution for intravenous administration, comprising an aqueous solution of the following amino acids:

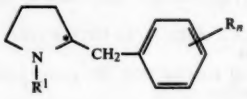
	Mole %
L-isoleucine	6.95–7.69
L-leucine	15.36–16.98
L-lysine	3.36–3.72
L-methionine	1.06–1.18
L-phenylalanine	7.99–8.83
L-threonine	7.74–8.56
L-tryptophan	1.71–1.89
L-valine	16.35–18.07
L-cystine	2.28–2.52
L-tyrosine	0.25–0.27
L-alanine	4.22–4.66
L-arginine	5.03–5.55
L-aspartic acid	0.66–0.72
L-glutamic acid	0.40–0.44
glycine	11.58–12.80
L-histidine	3.85–4.25
L-proline	4.77–5.27
L-serine	1.39–1.53

4,279,918
2-(NUCLEARLY-SUBSTITUTED)BENZYLPYRROLIDINES

Klaus Eistetter; Hartmann Schaefer, and Heinz G. Menge, all of Constance, Fed. Rep. of Germany, assignors to Byk Gulden Lomberg Chemische Fabrik G.m.b.H., Constance, Fed. Rep. of Germany

Filed Jul. 27, 1977, Ser. No. 819,460
Claims priority, application Luxembourg, Jul. 28, 1976, 75478
Int. Cl.[3] C07D *207/108, 207/09, 207/10;* **A61K** *31/40*
U.S. Cl. 424—274 **36 Claims**

1. A physiologically-active pharmacologically-acceptable compound of the formula



(I)

wherein

R^1 is a member selected from the group consisting of —H, aliphatic hydrocarbyl, alicyclic hydrocarbyl, cycloalkylalkyl aralkyl;

each R is, independently, a member selected from the group consisting of halo, alkyl, —OH, alkoxy, acyloxy, $—NH_2$, monosubstituted amino, disubstituted amino, $—NO_2$, phenyl and substituted phenyl;

n is a positive whole number of at most 4;

and any substituent bound to an aromatic carbon atom is a sterically unhindered member selected from the group consisting of halo, alkyl, —OH, alkoxy, acyloxy, $—NH_2$, substituted amino, $—NO_2$, phenyl or substituted phenyl; any substituent bound to an aliphatic carbon atom of aralkyl is a member selected from the group consisting of —OH and oxo; any substituent of substituted amino is a member selected from the group consisting of alkyl and alkanoyl having up to 5 carbon atoms;

"aliphatic" is an open-chain, linear or branched, substituted or unsubstituted, saturated or unsaturated carbon-based radical having up to 7 carbon atoms;

"hydrocarbyl" is a saturated or unsaturated organic radical having a single available bond and composed entirely of hydrogen and carbon atoms;

"aralkyl" is aryl-substituted alkyl wherein the alkyl has from 1 to 4 carbon atoms;

"aryl" is a substituted or unsubstituted monovalent unsaturated aromatic carbocyclic radical having at most 12 ring members and from 1 to 3 rings, each of which has from 5 to 7 ring members;

"acyloxy" is a radical having at most 7 carbon atoms and of one the formulae: —O—CO—R* and —O—CS—R*, wherein R* is alicyclic hydrocarbyl, cycloalkylalkyl, phenyl or aliphatic hydrocarbyl;

"alicyclic" is a saturated or aliphatically unsaturated radical having from 3 to 7 ring carbon atoms;

"alkyl" is a straight-chain or branched-chain saturated aliphatic hydrocarbon radical having from 1 to 7 carbon atoms and a single available bond; and

"cycloalkylalkyl" is alkyl (having from 1 to 4 carbon atoms) substituted by cycloalkyl (having from 3 to 7 ring carbon atoms).

35. A process which comprises administering a CNS-stimulant or antidepressant amount of a pharmacologically-acceptable compound according to claim 1 to a warm-blooded animal requiring CNS stimulation or afflicted with depression.

4,279,919
NOVEL LACTONES OF CYCLOPENTANOLS

Jean Buendia, Le Perreux-sur-Marne, and Michel Vivat, Lagny-sur-Marne, both of France, assignors to Roussel Uclaf, Paris, France

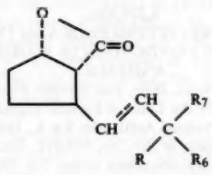
Continuation-in-part of Ser. No. 36,877, May 8, 1979, Pat. No. 4,221,809, which is a continuation-in-part of Ser. No. 779,178, Mar. 18, 1977, abandoned. This application Mar. 17, 1980, Ser. No. 131,053

Claims priority, application France, Mar. 19, 1976, 76 08004; Oct. 28, 1978, 78 30054

Int. Cl.³ A61K *31/365;* **C07D** *305/14*

U.S. Cl. 424—279 **6 Claims**

1. A lactone of the formula



I'

wherein the dotted line indicates the optional presence of a second bond, R is selected from the group consisting of hydrogen, alkyl of 1 to 4 carbon atoms and alkenyl and alkynyl of 2 to 4 carbon atoms, and R and R_6 together form a keto group, R_7 is $—(CH_2)_{mA}—CH_3$, m_A is 3,4,5 or 6 or R_6 and R_7 taken together form $=CH—(CH_2)_{nA}—CH_3$, n_A is 2,3,4, or 5.

5. A method of relieving hypertension and circulatory troubles in warm-blooded animals comprising administering to warm-blooded animals an hypotensively effective amount of a compound of claim 1.

4,279,920
2,2-DIMETHYL-3-(2-BROMO-2-PHENYL-VINYL)-CYCLOPROPANECARBOXYLIC ACID 3-PHENOXYBENZYL ESTERS AND PESTICIDAL USE

Rainer Fuchs; Hellmut Hoffmann, both of Wuppertal; Ingeborg Hammann, Cologne; Bernhard Homeyer, Leverkusen, and Wilhelm Stendel, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

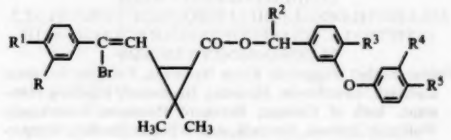
Filed Sep. 10, 1979, Ser. No. 74,045

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1978, 2842542

Int. Cl.³ A01N *43/30;* **C07C** *69/743, 121/75*

U.S. Cl. 424—282 **10 Claims**

1. A 2,2-dimethyl-3-(2-bromo-2-phenyl-viyl)-cyclopropanecarboxylic acid 3-phenoxybenzyl ester of the formula



in which

R is hydrogen, halogen, alkyl or alkoxy,

R^1 is hydrogen, halogen, alkyl, alkoxy or alkylthio, or

R and R^1 together are methylenedioxy,

R^2 is hydrogen, cyano or ethynyl, and

R^3, R^4 and R^5 each independently is hydrogen or fluorine, with the proviso that at least one of R^3, R^4 and R^5 is fluorine.

9. A method of combating arthropods which comprises applying to the arthropods, or to a habitat thereof, an arthropodically effective amount of a compound according to claim 1.

4,279,921
DICHLOROMALEIC ACID DIAMIDE DERIVATIVES AND THEIR USE AS FUNGICIDES

Gerhard Bonse, Cologne; Heinz U. Blank, Odenthal; Wilhelm Brandes, Leichlingen, and Volker Paul, Solingen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

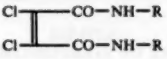
Division of Ser. No. 8,145, Jan. 31, 1979. This application Feb. 22, 1980, Ser. No. 123,868

Claims priority, application Fed. Rep. of Germany, Feb. 23, 1978, 2807662

Int. Cl.³ A01N *43/08, 43/16;* **C07D** *307/54, 309/32*

U.S. Cl. 424—285 **5 Claims**

1. A dichloromaleic acid diamide of the formula



in which

R is an aliphatic radical with up to 6 carbon atoms carrying a heterocyclic group which contains 5 or 6 ring members and an oxygen hetero-atom.

4. A method of combating fungi which comprises applying to the fungi, or to a habitat thereof, a fungicidally effective amount of a compound according to claim 1.

4,279,922
PHOTOSENSITIZING BENZOFURANACRYLICS

Kurt D. Kaufman, Kalamazoo, Mich., assignor to Thomas C. Elder, Inc., Hamilton, Ind.

Filed Jul. 29, 1980, Ser. No. 173,438

Int. Cl.³ A61K *31/34;* **C07D** *307/79*

U.S. Cl. 424—285 **20 Claims**

1. A compound selected from the group consisting of

(a) alpha-R-beta-R-2-R-3-R-4-R-7-R-6-loweralkanoyloxy-5-benzofuranacrylic acid, wherein R in each of the stated positions is independently selected from hydrogen and loweralkyl,

(b) alkali and alkaline earth metal salts thereof, and

(c) loweralkyl esters thereof.

15. The method of effecting photochemical sensitivity on the skin of a mammal comprising the step of orally or topically administering to the said mammal an effective photosensitizing dose of a compound of claim 1.

4,279,923
COMBATING PESTS WITH 3-(2,3-DICHLORO-3,3-DIFLUORO-PROP-1-EN-1-YL)-2,2-DIMETHYL-CYCLO-PROPANECARBOXYLIC ACID FLUORO-BENZYL ESTERS

Rainer Fuchs, Wuppertal; Klaus Naumann, Cologne; Reinhard Lantzsch, Leverkusen; Hermann Hagemann; Ingeborg Hammann, both of Cologne; Bernhard Homeyer, Leverkusen; Wolfgang Behrenz, Overath, and Wilhelm Stendel, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

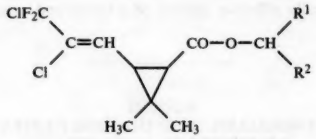
Filed Sep. 10, 1980, Ser. No. 185,836

Claims priority, application Fed. Rep. of Germany, Oct. 2, 1979, 2939913

Int. Cl.[3] **A01N** *53/00;* **C07C** *69/743, 121/75*

U.S. Cl. 424—304 **9 Claims**

1. A 3-(2,3-dichloro-3,3-difluoro-prop-1-en-1-yl)-2,2-dimethyl-cyclopropanecarboxylic acid fluorobenzyl ester of the formula



in which

R^1 represents hydrogen, cyano, alkyl with up to 4 carbon atoms, alkenyl with up to 4 carbon atoms or alkynyl with up to 4 carbon atoms, and

R^2 represents a phenyl radical which is substituted by fluorine and/or optionally fluorinesubstituted phenoxy, with the proviso that the radical R^2 in total contains at least one fluorine substituent.

8. A method of combating pests, comprising applying to the pests, or to a habitat thereof, a pesticidally effective amount of a compound according to claim **1**.

4,279,924
MIXTURE OF STEREOISOMERS OF α-CYANO-3-(4-HALOGENOPHENOXY)BENZYL 2-(4-CHLOROPHENYL)ISOVALERATE, A PROCESS FOR PRODUCING THE SAME, AND A COMPOSITION CONTAINING THE SAME

Yukio Suzuki, Toyonaka; Kiyoshi Kasamatsu, Takarazuka, and Kohichi Aketa, Kawanishi, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

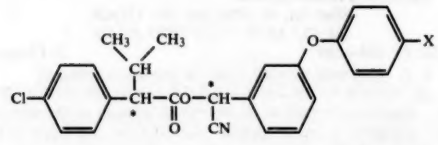
Filed Feb. 6, 1980, Ser. No. 118,887

Claims priority, application Japan, Feb. 6, 1979, 54/13034

Int. Cl.[3] **A01N** *37/34;* **C07C** *121/75*

U.S. Cl. 424—304 **14 Claims**

1. A mixture of stereoisomers of an α-cyano-3-(4-halogenophenoxy)benzyl 2-(4-chlorophenyl)isovalerate of the formula:



wherein X is a fluorine atom, a chlorine atom or a bromine atom, and * indicates an asymmetric carbon atom, which contains at least 60% of an enantiomer pair of a compound of said formula having an (S)-configuration on both the acid and alcohol moieties and an enantiomer thereof having an (R)-configuration on both the acid and alcohol moieties.

4,279,925
N-PHENETHYLAMINOPROPIOPHENONES AS LIPOGENESIS INHIBITORS

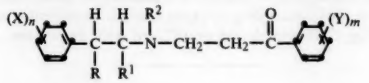
George R. Haynes, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Division of Ser. No. 115,467, Jan. 25, 1980. This application Jul. 21, 1980, Ser. No. 170,347

Int. Cl.[3] **A61K** *31/22, 31/275, 31/165*

U.S. Cl. 424—311 **1 Claim**

1. A method of inhibiting lipogenesis in a mammal, which comprises administering, to a mammal in need of such treatment, orally or parenterally a lipogenesis inhibiting amount of a compound of the formula:



wherein

R is hydrogen or hydroxyl;

R^1 is hydrogen or methyl;

R^2 is hydrogen or methyl;

n is zero, one or two;

X is hydroxyl, with the proviso that when n is one, the hydroxyl moiety is bonded to the carbon atom at the 4-position in the phenyl ring, and when n is two, the hydroxyl moieties are bonded to the carbon atoms in the 3- and 4-positions of the phenyl ring;

m is one;

Y is alkanoyloxy or alkenoyloxy,

and their pharmacologically acceptable acid addition salts.

4,279,926
METHOD OF RELIEVING PAIN AND TREATING INFLAMMATORY CONDITIONS IN WARM-BLOODED ANIMALS

Tiberio Bruzzese, Milan, Italy, and Rodolfo Ferrari, deceased, late of Milan, Italy (by Lorenzo Ferrari, executor), assignors to SPA-Societa Prodotti Antibiotici S.p.A., Italy

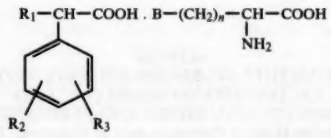
Continuation-in-part of Ser. No. 956,531, Oct. 16, 1978, abandoned, which is a continuation of Ser. No. 556,413, Mar. 7, 1975, abandoned. This application Aug. 3, 1979, Ser. No. 63,553

Claims priority, application United Kingdom, Mar. 7, 1974, 10239/74

Int. Cl.[3] **A61K** *31/205;* **C07C** *101/24*

U.S. Cl. 424—316 **14 Claims**

1. A method of relieving pain and treating inflammatory conditions in warm-blooded animals, including humans, which comprises administering to a warm-blooded animal suffering from pain or from an inflammatory condition a phenylalkanoic acid salt of the general formula:



wherein R_1 is a hydrogen atom or a methyl radical, R_2 is a halogen atom or an alkyl radical containing up to 5 carbon atoms, which may be straight-chained or branched, or is a cycloalkyl radical or is a phenoxy or benzoyl radical, which may be substituted by one or two halogen atoms, R_3 is a hydrogen atom or an allyloxy radical, B is a primary, secondary or tertiary amino group or a guanidino or amidino group and n is a whole number not greater than 5, said salt being administered in an amount sufficient to relieve pain or to ameliorate an inflammation condition.

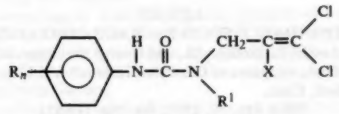
4,279,927

UREAS HAVING INSECTICIDE AND NEMATOCIDE ACTION

Franco Gozzo, Saronno; Luigi Abbruzzese, and Angelo Longoni, both of Milan, all of Italy, assignors to Montedison S.p.A., Milan, Italy

Division of Ser. No. 860,199, Dec. 13, 1977, abandoned. This application Dec. 28, 1979, Ser. No. 107,872
Claims priority, application Italy, Dec. 14, 1976, 30388 A/76
Int. Cl.³ A01N *47/28*
U.S. Cl. 424—322 **23 Claims**

1. Method for protecting useful agrarian plants against infestations by the insect parasites coleoptera, diptera, lepidoptera, and by nematodes, which consists in spreading on the plants quantities of at least 0.2 parts per million of a compound of general formula



in which:

R is H, halogen, methyl, ethyl or trifluoromethyl;

R^1 is H, C_1–C_3 alkyl, allyl, mono-chloroallyl, dichloroallyl, propargyl, mono-methyl propargyl, dimethyl-propargyl or phenyl;

n = 1 or 2, and

X is H or Cl.

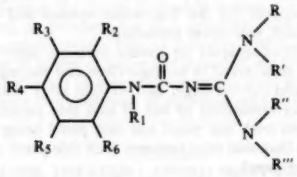
4,279,928

METHOD OF LOWERING BLOOD PRESSURE

Richard L. Riley, North Wales; George H. Douglas, Malvern, and John Yelnosky, Warrington, all of Pa., assignors to William H. Rorer, Inc., Fort Washington, Pa.

Filed Apr. 2, 1979, Ser. No. 26,161
Int. Cl.³ A61K *31/165, 31/16, 31/33, 31/155*
U.S. Cl. 424—324 **14 Claims**

1. A method for lowering blood pressure and maintaining a lowered blood pressure in humans which comprises administering multiple doses of an anti-hypertensive compound over a period of time sufficient to establish an effective blood level thereby producing a reduction in blood pressure and thereafter continuing the administration of said anti-hypertensive compound in amounts sufficient to maintain said reduction in blood pressure wherein said anti-hypertensive compound is a compound of the formula:



where:

R_2, R_3, R_4, R_5 and R_6 may be the same or different and are:

hydrogen,
halo,
lower alkyl,
halo lower alkyl,
nitro,
lower alkoxy,
hydroxy,
aryl lower alkoxy,
acyloxy,
cyano,
halo lower alkoxy or
lower alkyl sulfonyl;

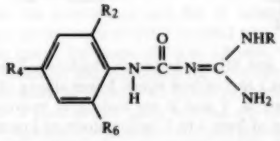
R and R′ are hydrogen or lower alkyl;

R″ and R‴ are hydrogen,
lower alkyl,
lower alkoxy,
lower alkenyl,
cyano alkenyl up to 9 carbon atoms,
cyclo alkyl lower alkyl,
lower alkyl,
cyclo alkyl,
aralkyl,
lower alkynyl,
halo alkyl,
hydroxy alkyl,
alkoxy alkyl,
cyano alkyl,
amino alkyl,
mono- and di- lower alkyl amino alkyl,
carbamoyl alkyl,
mono- and di- carbamoyl alkyl,
carboxy alkyl,
alkoxy carbonyl alkyl,
aralkoxy carbonyl alkyl,
acyl,
acylalkyl,
alkylsulfonyl or
aralkyl sulfonyl;

R″ and R‴ together may form a 5 to 7 atom ring which may include 0 to 2 hetero atoms of N, O or S;

R_1 is hydrogen or lower alkyl; provided at least one of R, R′, and R‴ is other than hydrogen; and the pharmaceutically-acceptable salts thereof.

10. A method for lowering blood pressure in humans which comprises the administration of a continual supply of an amidinourea sufficient to establish an effective blood level of said amidinourea, thereby inducing a reduction in blood pressure, and, thereafter, continuing the administration of said amidinourea in amounts sufficient to maintain said reduction in blood pressure; wherein said amidinourea is a compound of the formula:



wherein R is lower alkyl, or lower alkoxy; and R_2 and R_6 are the same and are lower alkyl, halo or halo lower alkyl; and R_4 is hydrogen, lower alkyl, halo, or halo lower alkyl; and the pharmaceutically-acceptable salts thereof.

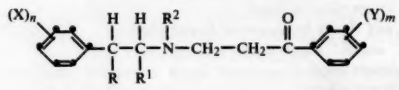
4,279,929

N-PHENETHYLAMINOPROPIOPHENONES AS LIPOGENESIS INHIBITORS

George R. Haynes, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Division of Ser. No. 115,467, Jan. 25, 1980. This application Jul. 21, 1980, Ser. No. 170,348
Int. Cl.³ A61K *31/165*
U.S. Cl. 424—324 **1 Claim**

1. A method of inhibiting lipogenesis in a mammal, which comprises administering, to a mammal in need of such treatment, orally or parenterally a lipogenesis inhibiting amount of a compound of the formula:



wherein
R is hydrogen or hydroxyl;
R^1 is hydrogen or methyl;
R^2 is hydrogen or methyl;
n is zero, one or two;
X is hydroxyl, with the proviso that when n is one, the hydroxyl moiety is bonded to the carbon atom at the 4-position in the phenyl ring, and when n is two, the hydroxyl moieties are bonded to the carbon atoms in the 3- and 4-positions of the phenyl ring;
m is one;
Y is one of
alkoxycarbonylamino;
alkenyloxycarbonylamino;
and their pharmacologically acceptable acid addition salts.

4,279,930

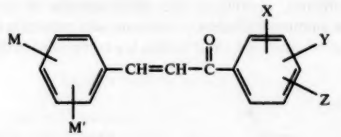
PROCESS FOR TREATING INFLAMMATION

Charles M. Hall, and Eldridge M. Glenn, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 949,457, Oct. 10, 1978, abandoned.
This application Sep. 14, 1979, Ser. No. 75,822
Int. Cl.³ C07C *49/248;* A01N *35/00*
U.S. Cl. 424—331 **10 Claims**

1. A process for treating inflammation comprising the administration of an anti-inflammatory amount of a compound of the formula:

Formula I



wherein M and M′ are hydrogen, hydroxy, halogen, lower alkyl of from 1 to 3 carbon atoms, lower alkoxy of from 1 to 3 carbon atoms; X, Y and Z are hydrogen, hydroxy, halogen, lower alkoxy of from 1 to 3 carbon atoms or lower acyloxy of from 1 to 6 carbon atoms, in association with appropriate pharmaceutical carriers.

4,279,931

NON-CARIOGENIC HYDROGENATED STARCH HYDROLYSATE FOR CONFECTIONERY AND PROCESS FOR PREPARING THIS HYDROLYSATE

Francoise Verwaerde; Jean-Bernard Leleu, and Michel Huchette, all of Lestrem, France, assignors to Roquette Freres, France

Filed May 14, 1979, Ser. No. 38,711
Claims priority, application France, Dec. 11, 1978, 78 34830
Int. Cl.³ A23L *1/09;* C13K *7/00*
U.S. Cl. 426—48 **10 Claims**

1. Non-cariogenic hydrogenated starch hydrolysate for confectionery and chewing-gums, comprising less than 3% of polyols whose DP is higher than 20, 4 to 14% sorbitol, 45 to 60% of maltitol, the balance up to 100% consisting essentially of a mixture of polyols of DP 3 to 20.

4,279,932

EDIBLE LAMINAR SHEET MATERIAL AND METHOD OF PREPARATION

Daikichi Koshida, Toyonaka; Ko Sugisawa; Takashi Kimura, both of Nara, and Setsuo Nakajima, Yamatotakada, all of Japan, assignors to House Food Industrial Company Limited, Osaka, Japan

Filed Apr. 23, 1979, Ser. No. 32,705
Int. Cl.³ A23L *1/00*
U.S. Cl. 426—89 **12 Claims**

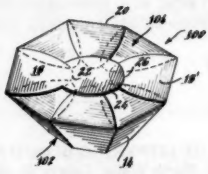
1. A method of preparing a laminar sheet material deformable in water comprising the step of adhering at least two edible sheets of different swelling properties in water along at least a portion of the surfaces of the sheets, at least one of the edible sheets being capable of swelling in water and at least one of the edible sheets being dehydrated.

4,279,933

EXPANDABLE FOOD PACKAGE CONTAINER

John J. Austin, La Grange, Ill., and George Webinger, Minneapolis, Minn., assignors to Champion International Corporation, Stamford, Conn.

Filed Jan. 30, 1980, Ser. No. 116,911
Int. Cl.³ B65D *5/28, 77/02, 81/34*
U.S. Cl. 426—124 **8 Claims**



1. A quick-opening, non-metallic container housing an expandable food bag in a non-expanded stored condition and in an expanded condition having a substantially increased volume when heated, said container comprising:
a base portion including
a bottom support panel of regular polygonal shape,
an upwardly and outwardly extending trapezoidal side panel connected to each edge of said polygonally shaped bottom support panel, each one of said side panels being connected to the adjacent one thereof by a V-shaped panel to form with said bottom support panel a bowl receiving said expandable food bag in stored condition, and
an integral pop-up cover securely enclosing and storing said expandable food bag in said bowl and providing additional side support for the bag when opened and the bag is expanded, said cover including
a plurality of separate top panels, each top panel being generally semi-ovoid in configuration and having a straight edge and curved edge, said straight edge resiliently and foldably connected to one of said side panels, the edge between each top panel and said panel being greater in length than said edge between each side panel and bottom support panel
said top panels being arranged such that adjacent side edges thereof overlap while the distal end of each top panel is spaced from the distal end of the opposed top panel defining an opening over the top center of the container, and
a seal tab member of generally circular configuration, said seal tab member being removably connected to the distal end of one of said top panels,
said seal tab member being releasably attached to the distal end of the top panel opposed to said one top panel while overlapping the distal end of each of the remaining top panels so that the opening over the top center of the container is closed by the seal tab member,
said seal tab member securely holds all of said top panels in

a closed position wherein the removal of said seal tab member will open said container thereby causing each of said top panels to assume a substantially upright position.

4,279,934

METHOD FOR IMPROVING THE ODOR, FLAVOR AND COLOR OF CANNED OCEAN CLAM PRODUCTS

Wayne A. Hutchison, Seaford, Del., and Steven R. DeVore, Salsbury, Md., assignors to The American Original Corporation, Seaford, Del.

Continuation-in-part of Ser. No. 839,410, Oct. 5, 1977, abandoned. This application Apr. 13, 1979, Ser. No. 29,854

Int. Cl.[3] A22C *29/04;* A23L *3/34*

U.S. Cl. 426—262 33 Claims

2. A method for preparing a canned ocean quahog clam food product having improved color, odor and flavor, said method comprising the steps of:

(a) contacting an ocean quahog clam product with a treating agent selected from the group consisting of SO_2 gas, sulfurous acid, sodium sulfite, potassium sulfite, potassium bisulfite, potassium metabisulfite, ammonium sulfite and mixtures thereof;

(b) sealing the treated clam product in a container; and

(c) subjecting the sealed container to conditions of temperature and pressure sufficient to produce a sterilized canned product;

said treating agent being present in an amount sufficient to prevent the formation of off-flavor, odor and color during the treatment of step (c).

4,279,935

DRY SAUSAGE PROCESSING WITH ADDED ACID

William E. Kentor, Highland Park, Ill., assignor to Servbest Foods, Inc., Highland Park, Ill.

Filed Mar. 23, 1979, Ser. No. 23,040

Int. Cl.[3] A23B *4/12*

U.S. Cl. 426—264 11 Claims

1. A method of producing dry sausage comprising a combination of sequential substantially uninterrupted steps of:

(a) adding a quantity of food-grade bactericides and bacteriostats to comminuted meats in an amount sufficient to at least inhibit growth of commonly encountered pathogenic and nonpathogenic organisms in said meats;

(b) admixing a given amount of at least one chemical acidulating material to such meats and relatively promptly forming sausages from such acidulated meats so that a pH of less than about 5.7 is attained within said sausages;

(c) thermally treating the so-formed sausages at time-temperature conditions sufficient to attain an average internal temperature within each sausage of at least about 58° C. within about 5 to 12 hours after initiation of step (a); and

(d) subjecting the thermally treated sausages to a controlled drying environment having a relatively high temperature and a relatively low relative humidity sufficient to remove about 28 grains of water per pound of air for a period of time sufficient to reduce the moisture level in each of said sausages to a maximum of approximately 35%.

4,279,936

MALTOL TREATED CANNED MEAT PROCESS

Dorothy L. Jones, Arlington, and Frank R. Conant, Lexington, both of Mass., assignors to William Underwood Company, Westwood, Mass.

Filed Sep. 24, 1979, Ser. No. 78,240

Int. Cl.[3] A23B *4/02;* A23L *1/272, 1/31, 3/310*

U.S. Cl. 426—265 9 Claims

1. In a process for preparing canned, cured, red meats wherein the pink color of the canned meat is preserved without using nitrates or nitrites, which process comprises curing the meat with a pickling brine, packing the meat in cans and heat cooking and sterilizing the canned meat,

the improvement comprising the step of mixing with said meat prior to sterilization, an amount of maltol sufficient to provide a proportion of free maltol by weight in the range of 0.02 to 0.2% in the canned meat.

4,279,937

LIQUID EXTRACT DECAFFEINATION WITH BENZYL ALCOHOL CONTAINING MIXTURES

Rudolf G. K. Strobel, Cincinnati, and Richard A. Eich, Oxford, both of Ohio, assignors to The Procter & Gamble Co., Cincinnati, Ohio

Continuation of Ser. No. 681,632, Apr. 29, 1976, abandoned. This application Jul. 11, 1977, Ser. No. 814,618

Int. Cl.[3] A23F *3/38, 5/22;* A23G *1/00*

U.S. Cl. 426—424 10 Claims

1. A process for decaffeinating a liquid caffeine-containing extract selected from the group consisting of coffee beans, cocoa beans, tea and cola nuts, comprising contacting said extract with a solvent system comprising a homogeneous mixture of benzyl alcohol and one or more organic liquid thinners for benzyl alcohol, and thereafter removing the decaffeinated extract from contact with the solvent system.

4,279,938

PREPARATION OF BEVERAGES CONTAINING A HEAD OF FROTH

Peter C. R. Hildebrand, Dublin, Ireland, assignor to Arthur Guinness Son and Company, London, England

Continuation of Ser. No. 833,879, Sep. 16, 1977, abandoned. This application May 2, 1979, Ser. No. 35,426

Int. Cl.[3] C12C *11/00;* A23L *2/00;* C12H *1/00*

U.S. Cl. 426—424 7 Claims

1. A method of preparing and serving a beverage which includes the steps of forming a sealed container selected from the group consisting of a conventional single-chambered bottle or can for individual consumption in which the beverage is sealed from the atmosphere and has in solution therewith nitrogen gas in the range of 0.015 to 0.035 vols./vol. and carbon dioxide gas in the range of 0.8 to 1.8 vols./vol., opening the sealed container and subjecting the beverage to excitation under atmospheric pressure to an extent and time necessary to cause some of each of said gases to come out of solution and cause the formation of a head of froth, said excitation comprising injecting a liquid under pressure supersaturated with a gas selected from the group consisting of nitrogen and carbon dioxide into the beverage in such a manner as to provide small gas seeding bubbles in the body of the liquid which initiate the evolution of gas from the main body of the beverage to form a head of froth characterized by small uniform bubbles throughout.

6. A method of preparing and serving a beverage which includes the steps of forming a sealed container selected from the group consisting of a conventional single-chambered bottle or can for individual consumption in which the beverage is sealed from the atmosphere and has in solution therewith nitrogen gas in the range of 0.015 to 0.035 vols./vol. and carbon dioxide gas in the range 0.8 to 1.8 vols./vol., opening the sealed container and subjecting the beverage to excitation under atmospheric pressure to an extent and time necessary to cause some of each of said gases to come out of said solution and cause the formation of a head of froth, said excitation comprising passing the beverage through a bed of small discrete sharp edge polystyrene granules to form a head of froth characterized by small uniform bubbles througout.

4,279,939

MILK REPLACER FOR BAKING CONTAINING ISOLATED VEGETABLE PROTEIN

Iue C. Cho, St. Louis, Mo., assignor to Ralston Purina Company, St. Louis, Mo.

Filed Jan. 9, 1980, Ser. No. 110,718
Int. Cl.[3] A23C *21/04;* A23J *3/00*
U.S. Cl. 426—583 13 Claims

1. A method of preparing a milk replacer containing an isolated vegetable protein for baking comprising:

(a) forming a suspension of an isolated vegetable protein material and dairy whey, said suspension having a solids level of between 3–50% by weight, said isolated vegetable protein material being present on a dry basis in an amount of 6–52% by weight and said dairy whey being present on a dry basis in an amount of 94–48% by weight;

(b) controlling the pH of the suspension to between about 5.8 to 7.5, said suspension having an added alkaline earth cation level of between 0.1 and 2.0% by weight of the solids;

(c) heating the suspension to a temperature of between about 190°–230° F. for between about 5–60 seconds; and

(d) cooling said suspension to form a milk replacer product suitable for baking.

4,279,940

CLOUDING WITH A STARCH MATERIAL

Otto B. Wurzburg, Whitehouse Station, and Julianne M. Lenchin, Plainsboro, both of N.J., assignors to National Starch and Chemical Corporation, Bridgewater, N.J.

Filed Feb. 1, 1980, Ser. No. 117,592
Int. Cl.[3] A23L *1/195, 2/00, 2/02*
U.S. Cl. 426—590 8 Claims

1. An improved method for clouding edible fluids, wherein the improvement comprises adding cow cockle starch, as a fat- and oil-free agent, in an amount from about 0.001% to 0.3% by weight, based on said fluid, said amount being sufficient to provide a light transmittance of 95% or less in said fluid at 540 nm, and a preservative, whereby said fluid is storage-stable.

4,279,941

LOW-FAT, BUTTER-FLAVORED SPREAD AND PROCESS

Peter M. Bosco, Brookfield Center, and William L. Sledzieski, Norwalk, both of Conn., assignors to Standard Brands Incorporated, New York, N.Y.

Filed Nov. 19, 1979, Ser. No. 95,626
Int. Cl.[3] A23D *3/00, 5/00*
U.S. Cl. 426—602 30 Claims

1. A low-fat, butter-flavored spread comprising: butter flavor; a dispersed phase comprising from 5 to 40%, based on the weight of the spread, of fat having an SFI profile with the following ranges

50° F.-40–80%

70° F.-25–50%

92° F.-<10%;

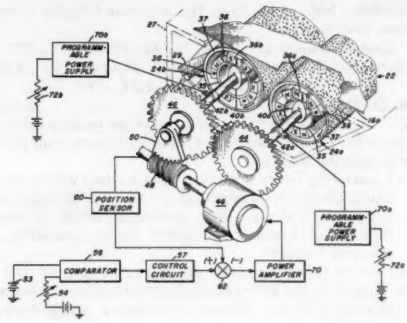
a continuous aqueous phase including a stabilizer; and an emulsifier system comprising a combination of a lipophilic emulsifier and a hydrophilic emulsifier, the emulsifier system being present in an amount of from 0.3 to 4.0%, based on the total weight of the spread, and each of the lipophilic and hydrophilic emulsifiers are present at levels of at least 0.05% on the same basis; the relative and total amounts of the emulsifiers and the stabilizer being effective to provide a stable emulsion and a product which is solid at 40° F.

4,279,942

MAGNETIC FIELD ADJUSTMENT FOR MAGNETIC BRUSHES

John P. Swapceinski, Bergen, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 3, 1980, Ser. No. 126,798
Int. Cl.[3] G03G *13/08*
U.S. Cl. 427—14.1 8 Claims



1. In magnetic brush apparatus for developing electrostatic images on an image-bearing member using a developer having a magnetic component, said apparatus including an applicator, magnetic field producing means for forming bristles of such developer on said applicator, means for contacting the bristles and images on the image-bearing member to apply toner particles to the member and bias means for applying an electric field between said applicator and image-bearing member, the improvement comprising:

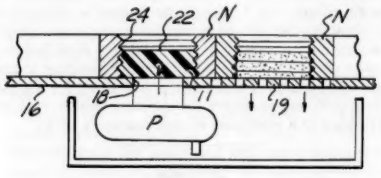
means for adjusting the strength of the magnetic field forming said bristles to change the conductivity of said bristles and enhance the development of electrostatic images on the image-bearing member.

4,279,943

METHOD OF PROVIDING RING PATCH FOR NUTS

Richard B. Wallace, Bloomfield Hills, Mich., assignor to The Oakland Corporation, Troy, Mich.

Filed Jan. 28, 1980, Ser. No. 116,016
Int. Cl.[3] B05D *7/22*
U.S. Cl. 427—57 34 Claims



1. The method of providing a threaded nut with a solid annular coherent deposit of particles of a thermoplastic resin in the threaded interior thereof and spaced from at least one end thereof to provide a narrow circumferentially extending zone at said one end of the nut which is clear of the deposit to facilitate initiating threading onto a mating threaded part, the nut being prepared for subsequent heating to fuse the particles to form an annular zone within the nut opening in which the resin forms a solid deposit within the thread grooves and is bonded to the thread surfaces throughout said annular zone, the method comprising the steps of providing a deposit of a fluid slurry of thermoplastic resin particles in a liquid carrier in

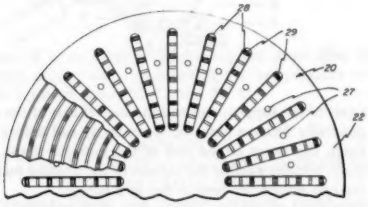
the thread grooves within the nut which deposit extends around the nut and to one end of the nut, drying the deposit sufficiently to prevent substantial fluid flow thereof and thereafter removing the deposit from thread grooves in a narrow circumferential zone extending inwardly from the said one end of the nut by the application of liquid carrier to the deposit at said one end of the nut to remove the deposit from the said narrow circumferentially extending zone, all at temperatures at least substantially below the fusion temperature of the resin particles.

4,279,944

EPOXY IMPREGNATED VENTILATED WINDING

Evangelos T. Laskaris, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 26, 1978, Ser. No. 973,415
Int. Cl.³ H02K *1/20*
U.S. Cl. 427—62 **11 Claims**



1. A method of making a superconducting winding comprising:

wrapping a strand of superconducting material around a form having a longitudinally-extending core and a flange at each end of said core to produce a plurality of layers of superconducting material surrounding said core;

following completion of wrapping of selected ones of said layers, and prior to wrapping of a next radially-outer layer, introducing a plurality of shims extending from one of said flanges in a substantially longitudinal direction to the other of said flanges at circumferentially spaced locations about the radially outer periphery of said selected ones of said layers;

impregnating said plurality of layers with a resinous bonding material in a liquid state;

curing said bonding material;

removing said form; and

removing said shims, whereby open channels are provided extending longitudinally through said windings and having an overall volume of about 5–20 percent of the total winding volume.

4,279,945

PROCESS OF PREPARING MAGNETIC RECORDING ELEMENTS CONTAINING TRANSPARENT RECORDING LAYER

Roger G. L. Audran, Villebon-sur-Yvette-Palaiseau, and Albert P. Huguenard, Le Plessis Trevise, both of France, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 27, 1978, Ser. No. 881,968
Claims priority, application France, Mar. 2, 1977, 77 06066
Int. Cl.³ B32B *5/16*; H01F *10/02*
U.S. Cl. 427—130 **10 Claims**

1. A process for preparing an element containing a magnetic recording layer which combines excellent magnetic recording and reproducing characteristics with transparency, said process comprising:

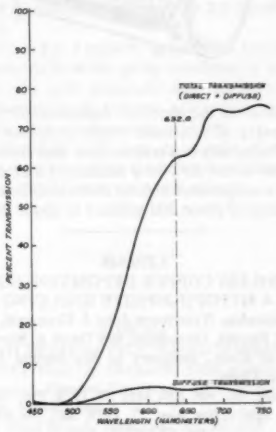
(a) Forming a substantially homogeneous dispersion of acicular magnetizable particles in a medium comprising a solution of substantially transparent binder in solvent,

said particles having an average width of less than about 0.06 micron and an average length up to about 1 micron,

said particles being ferro- or ferri-magnetic particles having a transmission of at least 10 percent for visible light having a wavelength of 632.8 nm,

the concentration of said binder being at least about 10 parts per 100 parts, by weight, of said particles; up to about 30 parts, by weight, for particles having an average length of at least about 0.06 micron and up to about 40 parts, by weight, for particles having an average length of less than about 0.06 micron,

(b) coating a support with said dispersion in an amount sufficient to provide a final dry layer thickness up to about 5 microns,



(c) removing substantially all solvent from said layer while forming pores therein and

(d) treating said layer when it contains particles having an average length of at least about 0.06 micron, with at least one of the following process steps,

(1) compacting said layer while it is in a malleable state to reduce its thickness,

(2) imbibing into said layer a substantially transparent liquid having a refractive index that is substantially the same as that of said binder, said liquid at least partially filling said pores in said layer,

said magnetic recording layer having a total transmission of at least 20 percent for visible light having a wavelength of 632.8 nm and a ratio of direct transmission to total transmission at said wavelength of at least 50 percent.

4,279,946

COATING COMPOSITIONS

Stewart Derbyshire, Birmingham, England, assignor to Foseco International Limited, Birmingham, England

Filed Aug. 29, 1978, Ser. No. 937,840
Claims priority, application United Kingdom, Sep. 7, 1977, 37385/77
Int. Cl.³ B29C *1/04*
U.S. Cl. 427—133 **10 Claims**

1. A method of forming a coating on the surface of a foundry mould or core which method comprises applying to the surface a coating of a coating composition which comprises:

(i) an essentially aliphatic hydrocarbon having a flash point (Pensky-martens closed cup) in excess of 32° C., and

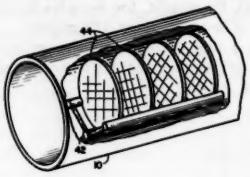
(ii) one or more mono alkyl ethers of a polyhydric alcohol, and a particulate refractory material, and igniting the coating to burn off the carrier liquid.

4,279,947

DEPOSITION OF SILICON NITRIDE

Jon C. Goldman, Tempe, Ariz.; Larry D. McMillan, Austin, Tex., and James B. Price, Phoenix, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 635,012, Nov. 25, 1975, abandoned.
This application Mar. 26, 1979, Ser. No. 23,568
Int. Cl.[3] C23C *11/14*
U.S. Cl. 427—255.2 4 Claims



1. A method for the pyrolytic deposition of silicon nitride upon a plurality of substrates which comprises placing said plurality of substrates in a reactor tube with their broad faces perpendicular to the flow of a mixture of dichlorosilane and ammonia at a temperature of from about 650° C. to about 1000° C. in a vacuum of about 300 millitorr to about 10 Torr.

4,279,948

ELECTROLESS COPPER DEPOSITION SOLUTION USING A HYPOPHOSPHITE REDUCING AGENT

Peter E. Kukanskis, Watertown; John J. Grunwald, New Haven; Donald R. Ferrier, Thomaston, and David A. Sawoska, Woodbury, all of Conn., assignors to MacDermid Incorporated, Waterbury, Conn.

Division of Ser. No. 909,209, May 25, 1978, Pat. No. 4,209,331.
This application Aug. 27, 1979, Ser. No. 69,742
Int. Cl.[3] C23C *3/02*
U.S. Cl. 427—305 15 Claims

1. A method of electrolessly depositing a copper plating on the surface of a workpiece comprising the steps of preparing the surface of the workpiece to render it more receptive to plating, immersing the workpiece in a solution comprising, in addition to water, a soluble source of cupric ions, a complexing agent effective to maintain said cupric ions in solution at pH levels between 5 and 13, and a reducing agent effective to reduce the cupric ion to copper as a deposited conductive metal film on the prepared nonconductive surface of the workpiece when in contact with the solution, wherein said reducing agent is a soluble source of hypophosphite ions; selecting said complexing agent to be effective at pH levels between 5 and 13 for complexing the cupric ions, and coordinating said solution pH within said range of 5 to 13 for each complexer selected to give said deposited conductive metal film.

4,279,949

PROCESS AND APPARATUS FOR COATING WEBS AND ADJUSTING THE WET APPLICATION WEIGHT OF THE COATING MATERIAL

Reinhard Esser, Bergisch-Gladbach, Fed. Rep. of Germany, assignor to J. M. Voith GmbH, Fed. Rep. of Germany

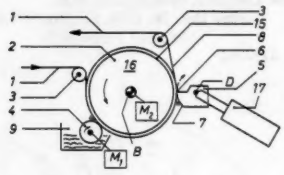
Filed Oct. 4, 1979, Ser. No. 81,784
Claims priority, application Fed. Rep. of Germany, Oct. 5, 1978, 2843371
Int. Cl.[3] B05D *3/12, 1/28;* B05C *11/02, 3/02*
U.S. Cl. 427—356 26 Claims

1. A process for coating a traveling web of paper, or the like, with a coating material, comprising:

passing the traveling web over the circumferential, peripheral surface of a roll-shaped support; the support having an axis of rotation; the surface of the support being elastic where the traveling web passes over it; applying excess coating material to the outward surface of the traveling web which is passing over the support;

scraping off excess coating material from the surface of the traveling web using a scraper having a curved entrance flank that faces toward the outward surface of the traveling web, wherein the entrance flank has a sharp edged end downstream in the motion of the web past the scraper; the scraper being movable with respect to the support for moving the position of the sharp edged end thereof with respect to the support;

pressing the sharp edged end of the entrance flank against the surface of the coating material traveling by with sufficient force that the support is pressed inward by the scraper;



the axis of the support roll and the swivel axis of the scraper generally define a plane between them, and before adjustment, the sharp edged end of the entrance flank is normally pressed against the surface of the coating material at the line across the web in the said plane,

for selecting the application weight of coating material on the outward surface of the web, adjusting the length of the pressing zone at which the entrance flank presses upon the coating material by swiveling the scraper with respect to the support about a respective axis for shifting the position of the sharp edged end of the entrance flank with respect to the support so that the sharp edged end of the entrance flank is moved out of the said plane, and thereby adjusting the amount of the entrance flank that will be contacted by the coating material within the pressing zone.

4,279,950

JOINTING OF CONCRETE STRUCTURE

Hiromichi Tanaka, Chiba, and Choji Tomizawa, Funabashi, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Dec. 21, 1979, Ser. No. 105,990
Claims priority, application Japan, Dec. 26, 1978, 53-161711
Int. Cl.[3] B05D *3/00, 7/00*
U.S. Cl. 427—393.6 10 Claims

1. A method for jointing concrete structures comprising applying an adhesive to a base concrete structure and then applying new concrete thereto, said adhesive comprising an emulsion of a copolymer of ethylene and vinyl acetate, or a copolymer of ethylene, vinyl acetate and a vinyl monomer having a functional group selected from the group consisting of carboxyl, epoxy, hydroxy, methylol and alkoxy group, said copolymer emulsion having a glass transition temperature of −5° to +5° C.

4,279,951

METHOD FOR THE ELECTROLESS DEPOSITION OF PALLADIUM

William V. Hough, Butler; John L. Little, Evans City, and Kevin E. Warheit, Butler, all of Pa., assignors to Mine Safety Appliances Company, Pittsburgh, Pa.

Division of Ser. No. 3,351, Jan. 15, 1979. This application Jul. 3, 1980, Ser. No. 165,479
Int. Cl.[3] C23C *3/02*
U.S. Cl. 427—437 7 Claims

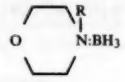
1. A method for the electroless deposition of palladium

comprising contacting a catalytically active substrate with an aqueous solution containing

(a) Between about 0.002 and 0.12 moles per liter of divalent palladium,

(b) between about 0.05 and 10 moles per liter of a base selected from ammonia, primary alkylamines having up to five carbon atoms, ethanolamine, ethylenediamine, N-methylated ethylenediamines or mixtures thereof,

(b) between about 0.005 and 0.21 moles per liter of a reducing agent selected from the group of tertiary amine boranes, consisting of trialkylamine borane, having the formula $R_1R_2R_3$, NBH_3, where R_1, R_2 and R_3 are methyl or ethyl groups; straight chain methoxy substituted dimethylamine boranes, having the formula $CH_3(OCH_2CH_2)_nN(CH_3)_2BH_3$, wherein n is an integer from 1 to 4; and N alkyl substituted morpholine borane, having the formula



where R is an alkyl group having not more than three carbon atoms, while maintaining the temperature of the bath between about 20° C. and 70° C.

4,279,952

MULTILAYER INSULATING MATERIAL AND PROCESS FOR PRODUCTION THEREOF

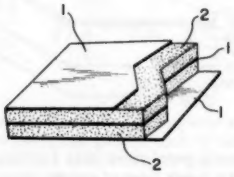
Fumio Kodama, Chofu, and Noboru Ohyama, Iwaki, both of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Japan

Filed Nov. 27, 1978, Ser. No. 965,242

Claims priority, application Japan, Dec. 14, 1977, 52/167826[U]

Int. Cl.³ D04H *1/08*

U.S. Cl. 428—36 **14 Claims**



1. A multilayer heat insulating material suitable for use in heating furnaces in which a non-oxidizing atmosphere is used, which insulating material comprises a sheet of carbon fiber felt having gas permeability, and a sheet of graphite having a thickness less than 1 mm. and a density of 0.6 to 1.6 grams/cm^3, bonded to at least one surface of the sheet of carbon fiber felt by means of a carbonaceous binder, the density of said graphite sheet being substantially greater than that of said felt sheet.

4,279,953

METHOD FOR TREATING POLYURETHANE FOAM

Bruce L. Barden, Mogadore, and William D. Coder, Jr., Akron, both of Ohio, assignors to The General Tire & Rubber Company, Akron, Ohio

Filed Apr. 28, 1980, Ser. No. 144,138

Int. Cl.³ B05D *1/14, 1/16;* **B32B** *33/00*

U.S. Cl. 428—90 **10 Claims**

1. The method which comprises coating at least one surface of a flexible, open-cell polyetherurethane foam with an aqueous alkaline compounded carboxylated copolymer latex composition at a coating weight of from about 2 to 12 ounces per square yard on the foam, pressing said coating on said foam to impregnate the outer surface layers of said foam to a depth of from about 15 to 35% of the volume thickness of said foam and drying said impregnated foam at a temperature of up to about 375 degrees F. to provide said foam with an outer surface layer which resists heat degradation, the dry weight of said latex being from about 1.0 to 6.0 ounces per square yard on the foam,

I. said polyetherurethane containing from about 30 to 70 parts by weight of aluminum trihydrate per 100 parts by weight of the polyalkylenether polyol moieties of said foam and

II. said carboxylated copolymer of said latex composition being a copolymer of:

a. from about 25 to 55 parts by weight of at least one monomer selected from the group consisting of butadiene-1,3, piperylene, isoprene and 2,3-dimethyl butadiene-1,3,

b. from about 1 to 4 parts by weight of at least one monomer selected from the group consisting of acrylic acid, methacrylic acid, ethacrylic acid, sorbic acid, maleic acid, fumaric acid, itaconic acid, vinyl benzoic acid, crotonic acid and citraconic acid and

c. from about 40 to 70 parts by weight of at least one monomer selected from the group consisting of styrene, alpha-methyl styrene and vinyl toluene.

4,279,954

WEB WITH RELIEF-STRUCTURED SURFACE AND METHOD OF MAKING THE SAME

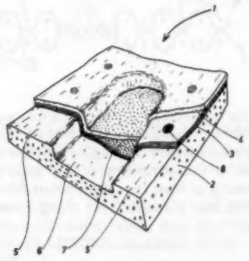
Bengt O. Johnard, Hovaas, Sweden, assignor to Forbo Betriebs AG, Zürich, Switzerland

Filed Dec. 6, 1979, Ser. No. 101,059

Claims priority, application Switzerland, Dec. 7, 1978, 12492/78

Int. Cl.³ B32B *3/12, 3/30, 3/26*

U.S. Cl. 428—158 **2 Claims**



1. A decorative web, comprising a base layer of at least partially foamed macromolecular material and having a varying thickness so as to be provided with a relief-structured surface; a top layer over said surface and having a contour following the relief-structure of said surface; an intermediate printed fibrous web between said layers in conformance with said relief-structure and being composed of a fibrous material subject to deformation at the foam-forming temperature of said macromolecular material; and a printed visually observable pattern and in registry therewith a pattern of foam regulating medium which latter, on deformation of the fibrous material at the foam-forming temperature, regulates the foaming of the macromolecular material so as to cause formation of said relief-structured surface thereon.

4,279,955

WEDGE SHAPED CHUTE WALLS WITH BENT ENDS FOR CIGARETTE MAGAZINES

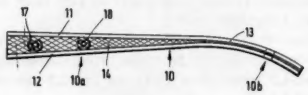
Heinz Focke, Verden, and Bernhard Focke, Bremen, both of Fed. Rep. of Germany, assignors to Focke & Co., Verden, Fed. Rep. of Germany

Filed Mar. 26, 1979, Ser. No. 23,916

Claims priority, application Fed. Rep. of Germany, Apr. 1, 1978, 2814166

Int. Cl.³ B32B *3/02, 15/00*

U.S. Cl. 428—174 **6 Claims**



1. A chute wall for forming chambers within a cigarette hopper, comprising:

(a) a pair of outer metal sheets (**11, 12**) disposed in an elongated V configuration,

(b) bonding means (**13**) disposed between and connecting the converging ends of the sheets together.

(c) a hardened spacer composition (**14**) filling a remaining wedge-shaped volume defined between the diverging facing inner surfaces of the sheets and not occupied by the bonding means, and

(d) a plurality of projections (**15, 16**) on the inner surfaces of the sheets proximate their diverging ends for anchoring the sheets in the spacer composition.

4,279,956

FABRIC FOR USE IN PROTECTION FOR CHAIN SAWS

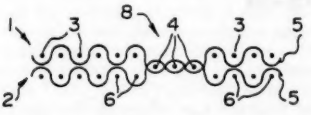
Bruce E. Bartels, Cambridge, Canada, assignor to Wheelabrator Corporation of Canada Limited, Canada

Filed Mar. 28, 1980, Ser. No. 135,183

Claims priority, application Canada, Feb. 14, 1980, 345658

Int. Cl.³ B32B *23/02, 3/00*

U.S. Cl. 428—192 **15 Claims**



1. A pad for protecting against injuries caused by moving chain saw blades, comprising a plurality of superposed woven composite fabrics formed of tough synthetic resin and firmly held together at the periphery of the pad, each composite fabric comprising at least two superposed fabric layers which are interwoven into a single layer along spaced substantially parallel strips.

4,279,957

LAMINATED FILM OR SHEET STRUCTURE AND PROCESS FOR PRODUCTION THEREOF

Takayuki Hiraoka, Wagi, and Kenji Fujiyoshi, Tokyo, both of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Aug. 30, 1979, Ser. No. 71,067

Claims priority, application Japan, Aug. 31, 1978, 53-105636

Int. Cl.³ B32B *27/32*

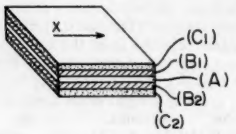
U.S. Cl. 428—212 **6 Claims**

1. A laminated film or sheet structure composed of

(i) an adhesive layer (A),

(ii) synthetic resin film layers (B_1) and (B_2) monoaxially oriented in a direction oblique to the longitudinal direction of the film, said layers (B_1) and (B_2) being located on both surfaces of said layer (A) in contact therewith, the directions of the orientations of said layers (B_1) and (B_2) crossing each other, and

(iii) at least one of a substantially non-oriented synthetic resin film layer (C_1) and a substantially non-oriented synthetic resin film layer (C_2), said layers (C_1) and (C_2)being melt-adhered to at least one of said layers (B_1) and (B_2), said layers (C_1) and (C_2) having a lower orientation temperature than said layers (B_1) and (B_2).



4,279,958

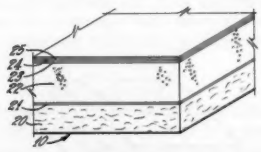
COMPOSITE FOAM PANEL

Abu Ahmad, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Nov. 23, 1979, Ser. No. 96,958

Int. Cl.³ B32B *5/20, 7/02, 17/04, 23/02*

U.S. Cl. 428—215 **10 Claims**



1. In a composite panel comprising a cellular core and an upper layer and a lower layer of organic fibers on the major surfaces of said core, said panel having upper outer and lower outer inorganic layers in contact with said upper and said lower layers of organic fibers, the improvement comprising an interposed layer of inorganic fibers in contact with said cellular core and said upper layer of organic fibers.

2. The panel of claim **1** in which said cellular core comprises a urethane foam, said upper layer and lower layer of organic fibers comprise rayon fibers, said upper outer and said lower outer inorganic layers comprise glass and said interposed layer comprises glass.

3. The panel of claim **2** in which said cellular core penetrates said interposed layer, said layers of organic fibers and said upper and lower outer glass layers to bond said layers, said core remaining substantially discrete.

4. The panel of claim **3** in which said lower outer inorganic layer comprises a glass fiber board having a thickness within the range of about ¼ inch to about 2½ inches and an apparent density within the range of about 6 to about 12 pounds per cubic foot.

5. The panel of claim **4** in which said cellular layer has a thickness within the range of from about ½ inch to about 4 inches.

4,279,959
WATER-INSOLUBLE COPOLYMERS CONTAINING AMIDE-POLYALDEHYDE THERMOSETTABLE SYSTEM

Dominic R. Falgiatore, Philadelphia, and William D. Emmons, Huntingdon Valley, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 848,258, Nov. 3, 1977, Pat. No. 4,199,643. This application Dec. 28, 1979, Ser. No. 108,104

Int. Cl.[3] **D04H** *1/58;* **B32B** *27/00;* **B05D** *3/02;* **D06M** *13/34*

U.S. Cl. 428—288 **19 Claims**

1. A process for making a fabric or paper which comprises treating a textile or paper substrate with

(1) a water-insoluble addition copolymer of (A) a monomer which is the product of an ethylenically unsaturated unsubstituted amide monomer condensed with one aldehyde group of a polyaldehyde, the product having at least one free aldehyde group, and (B) at least one other ethylenically unsaturated monomer; the amide monomer component of (A) and any unsubstituted amide monomer of (B) totaling up to 50% of the total monomers, by weight, and, optionally,

(2) an external crosslinker

and curing the treated substrate at an elevated temperature.

19. A treated fabric made by the process of claim **1**.

4,279,960
APPLICATION OF DURABLE, ANTISTATIC, SOIL RELEASE AGENT

Kenneth C. Smeltz, Wilmington, Del., and Charles L. Strickler, Elkton, Md., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 932,397, Aug. 9, 1978, abandoned. This application Jun. 5, 1980, Ser. No. 156,641

Int. Cl.[3] **B44D** *1/22;* **B32B** *27/00;* **B05D** *3/02;* **C08G** *12/30*

U.S. Cl. 428—290 **30 Claims**

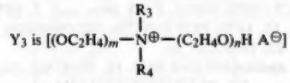
1. Process for applying durable, antistatic soil release agent to a substrate, said agent being of the formula

wherein

X is an aminoplast resin moiety having amino nitrogen atoms and 4 to 6 methylene groups, each of which methylene groups is attached to an amino nitrogen atom;

Y_1 is $O(C_2H_4O)_{5\text{-}20}R_1$ wherein R_1 is $C_{1\text{-}5}$ alkyl;

Y_2 is $O(C_2H_4O)_{5\text{-}88}R_1$ wherein R_2 is $C_{6\text{-}20}$ alkyl;



wherein R_3 is $C_{4\text{-}20}$ alkyl, $C_{4\text{-}20}$ alkenyl or benzyl,

R_4 is $C_{1\text{-}4}$ alkyl, $A^{\ominus}$ is an organic or inorganic anion, each of m and n is at least 1 and the sum of m and n is 12 to 100;

each of a and b is 0 to 2 and the sum of a and b is 0 to 2;

c is 1 to 2;

the sum of a, b and c is 1 to 4;

said agent having a calculated hydrophile-lipophile balance (HLB) of 14.5 to 18.0, a 20 weight % aqueous solution viscosity, as measured at 20° C. on a Brookfield viscometer, of 0.250 to 16.000 pascal seconds, an electrical resistivity (Keithley log R) on polyester fabric, at 20±2% relative humidity and 23°±1° C., of no greater than 13.00 initially and no greater than 14.25 after ten washes, and a soil release rating on polyester fabric of at least 3 initially, said process comprising the steps:

(a) diluting the agent with normally liquid medium to achieve the desired application liquid viscosity,

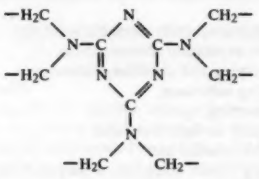
(b) adding sufficient salt of a mono-, di- or trivalent metal or of an ammonium cation to achieve a cloud point (measured as described herein), of the diluted agent of step (a) of less than 100° C. but greater than 25° C., or adding sufficient polyacidic compound having a second dissociation constant of greater than 1×10^{-8} to achieve a pH of the diluted agent of step (a) of 3.0 to 6.0, or adding both said salt and said polyacidic compound to achieve said cloud point and pH,

(c) applying the diluted agent of step (b) to the subtrate to be treated so as to achieve the desired level of agent on the substrate,

(d) drying and curing the agent on the substrate, and

(e) recovering substrate which has been durably treated with the agent of the aforesaid formula.

20. Process of claim **1** wherein Y_1 is $O(C_2H_4)_{10\text{-}16}CH_3$, Y_2 is $O(C_2H_4O)_{15\text{-}30}C_{13}H_{27}$, R_3 is $C_{8\text{-}18}$ alkyl, R_4 is CH_3, $A^{\ominus}$ is $^{\ominus}OSO_3CH_3$, m+n is 20 to 50, and X is



28. The product of the process of claim **20** which product is a textile fabric.

4,279,961
ELECTROSTATIC RECORD MATERIAL

Hironari Fujioka, and Hajime Matsubayashi, both of Amagasaki, Japan, assignors to Kanzaki Paper Manufacturing Co., Ltd., Japan

Filed Apr. 16, 1980, Ser. No. 140,710

Claims priority, application Japan, Apr. 20, 1979, 54-49275

Int. Cl.[3] **B32B** *5/16;* **G01D** *15/06*

U.S. Cl. 428—328 **2 Claims**

1. An electrostatic record material comprising a support substrate sheet, an electroconductive base layer on said support, and a record forming layer on said base layer, wherein the improvement comprises utilizing an electroconductive base layer comprising:

(i) a zinc oxide powder containing relatively small amounts of at least one additive member selected from the group consisting of Al_2O_3, Cr_2O_3, Ga_2O_3 and In_2O_3, said powder having a specific resistivity of 0.01 to 900 ohm-cm at a pressure of 150 Kg/cm^2; and

(ii) two coloring agents each in an amount of 0.0001 to 0.03 part by weight per 100 parts by weight of said zinc oxide powder, wherein one of said coloring agents has a spectral reflectance of 400 to 530 nm and the other of said coloring agents has a spectral reflectance of 580 to 800 nm.

4,279,962

PROTECTIVE COATING FOR CATHODICALLY PROTECTED METAL SURFACES

Rainer-Leo Meyer, Krämerstrasse 1, D-7580 Bühl-Vimbuch, Fed. Rep. of Germany; Rainmar John, Achern, Fed. Rep. of Germany; Bernhard Eisenhauer, Rastatt, Fed. Rep. of Germany, and Herta Baumstark, Rheinmünster, Fed. Rep. of Germany, assignors to Olga Meyer and Rainer Meyer, both of Bühl, Fed. Rep. of Germany

Filed Dec. 4, 1979, Ser. No. 100,207

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1978, 2855120

Int. Cl.[3] **B32B** *15/08, 15/18*

U.S. Cl. 428—332 **12 Claims**

1. Protective coating on a cathodically protected metal surface comprising a base coating and a cover coating, in which the base coating includes a zinc powder capable of hardening or curing under ambient air humidity and having a composition, all parts being approximate and by weight, comprising:

6–10 parts polyisocyanate-prepolymer with an NCO content of about 16% and capable of hardening under ambient humidity,

7–9 parts high boiling point aromatic solvent,

0.01–0.03 parts deaeration substance,

0.3–0.8 parts drying and stabilizing substance,

3–6 parts gelling substance,

0.3–0.5 parts wetting agent,

4–7 parts pigment in flake form and

65–75 parts zinc powder and

a cover coating which comprises a polyurethane-tar coating capable of hardening under ambient air humidity comprising:

16–20 parts aromatic polyisocyanate with an NCO content of 5–7%,

1–3 parts liquid higher molecular polyisocyanate with an NCO content of 3–4%,

5–20 parts tar with a viscosity of 5600 to 6400 poise/25° C.,

6.5–8 parts drying agent,

0.05–0.1 parts deaeration agent,

3.5–4.5 parts precipitation prevention agent,

30–40 parts micaceous iron ore or hematite powder,

5–10 parts inorganic filler, and

2–5 parts stabilizing agent.

4,279,963

ENAMEL SLIP

Vasily M. Gladush, ulitsa Kirova, 7, kv. 41; Nena G. Eremenko, Topol, 3, korpus 2, kv. 45; Ljudmila V. Markina, prospekt Geroev, 11, kv. 29; Evgeny S. Kochuev, prospekt Pravdy, 67, kv. 363, all of Dnepropetrovsk; Mikhail P. Krainik, ulitsa; Suchkova, 228, kv. 2; Evgenia E. Cherkasova, ulitsa Shosseinaya, 2, kv. 9, both of Novomoskovsk, and Nikolai M. Lyashenko, ulitsa Suchkova, 71, Novomoskovsk, all of U.S.S.R.

Filed Mar. 20, 1980, Ser. No. 132,098

Int. Cl.[3] **B32B** *15/04, 17/06;* **C03C** *5/06*

U.S. Cl. 428—433 **5 Claims**

1. An enamel slip containing frit, an electrolyte, quartz sand and water, characterized in that it contains nepheline as the suspending agent and has the following composition, parts by weight:

frit	100
electrolyte	0.8–2.5
nepheline	1.5–10
quartz sand	1.0–40
water	40–50

4,279,964

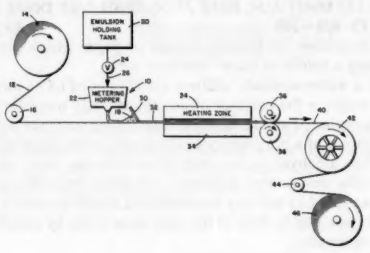
FROTH COATING OF PAPER PRODUCTS AND PROCESS FOR FORMING SAME

David S. Heller, Dover, Del., assignor to Reichhold Chemicals, Incorporated, White Plains, N.Y.

Filed Nov. 26, 1979, Ser. No. 97,144

Int. Cl.[3] **B32B** *23/08, 27/10;* **B05D** *3/12, 3/02*

U.S. Cl. 428—496 **27 Claims**



1. A process for producing a smooth coated paper product having improved opacity and ink hold-out characteristics comprising:

(a) applying at least one coating to the surface of a paper substrate of a frothed emulsion containing a plurality of very fine cells formed from a curable elastomeric resin emulsion having at least 10 parts by weight of filler solids based on 100 parts by weight of elastomeric resin solids;

(b) spreading said frothed elastomeric resin emulsion over the surface of a paper substrated to produce a substantially uniform, thin frothed coating;

(c) partially curing said applied thin frothed coating;

(d) passing said partially cured froth coated paper substrate through a set of calendar rolls to compress said frothed coating to reduce its thickness by about 80 to about 99 percent to form a thin, densified smooth layer, the said layer being from about 2 to about 6 mils in thickness; and

(e) finally curing said densified frothed coating to form a smooth continuous coating intimately bonded to the surface of the paper product.

19. A smooth coated paper substrate having at least one thin densified frothed surface formed on a paper substrate by compressing a thin layer of a frothed elastomeric emulsion according to the process of claim **1**.

4,279,965

BLANK PIPE FOR MANUFACTURE

Orvar Elmqvist, Bodalsvägen 4,, 141 36 Lidingö, Sweden

PCT No. PCT/SE78/00023, § 371 Date Apr. 2, 1979, § 102(e) Date Mar. 15, 1979, PCT Pub. No. WO79/00079, PCT Pub. Date Feb. 22, 1979

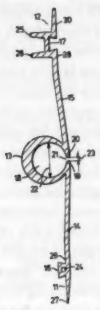
This PCT application filed Mar. 15, 1979, Ser. No. 24,653

Int. Cl.[3] **F16L** *9/16, 11/16*

U.S. Cl. 428—582 **3 Claims**

1. A blank for pipe manufacture, intended to be wound helically so that a joint is formed between adjacent turns in the helically wound blank thereby, that a portion on one lateral edge **(11)** on the blank in a turn is fitted into a portion on the remaining lateral edge **(12)** of the blank in an adjacent turn, characterized in that a portion **(13)** located between said two portions on the lateral edges of the blank has a bulge, which encloses a cavity and has such configuration, that the cross-section area **(18)** of the cavity enclosed by the bulge in a section through the transverse direction of the blank is substantially greater than the cross-section area **(21)** in said section between the two adjacent edges **(19,20)** on the blank, which edges constitute the places of attachment of the bulge, and that the cross-section area **(18)** of the cavity enclosed by the bulge

includes distances in said section substantially in parallel with the transverse direction of the wall blank, which distances (for



example 22) are substantially longer than the distance (21) between said adjacent edges (19,20) on the blank.

4,279,966

PRESSURE RESISTANT SQUARE PANEL

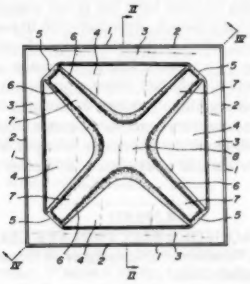
Hiroshi Wakana, Fuchu; Shigeru Yamada, Kiyose, and Akira Sato, Higashimurayama, all of Japan, assignors to Bridgestone Tire Co., Ltd., Tokyo, Japan

Filed Apr. 6, 1979, Ser. No. 27,702

Claims priority, application Japan, Apr. 10, 1978, 53-45894[U]

Int. Cl.³ E04C *2/32, 2/50*

U.S. Cl. 428—595 **13 Claims**



1. In a pressure resistant panel receiving a uniform loading by hydraulic pressure and made of steel, cast iron and the like, including reinforcing ribs extending from corners to a center of said panel to form a substantially X-shaped rib as viewed in a plane of the panel, and flanges extending in a uniform height along peripheral edges of a pressure receiving surface of the panel, the improvement comprising, a bottom portion along bottom edges of said flanges of said pressure receiving surface and flat portions slightly higher than and inside said bottom portion, said reinforcing ribs being formed progressively higher from said corners toward the center of the panel.

4,279,967

SOFT COPPER ALLOY CONDUCTORS AND THEIR METHOD OF MANUFACTURE

Kazuo Sawada, Abenomotomachi, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Division of Ser. No. 1,955, Jan. 8, 1979, Pat. No. 4,233,067. This application Apr. 23, 1980, Ser. No. 143,114

Claims priority, application Japan, Jan. 19, 1978, 53-5070; Jan. 20, 1978, 53-5530

Int. Cl.³ B32B *15/20*

U.S. Cl. 428—647 **4 Claims**

1. A soft copper alloy conductor which consists essentially of 5–200 ppm of calcium, the balance being substantially copper, and a coating on the surface of the copper alloy conductor of at least one metal selected from the group consisting of tin, lead and their alloys.

4,279,968

COINS AND SIMILARLY DISC-SHAPED ARTICLES

Michael J. H. Ruscoe, St. Albert; Kshitindra M. Sarkar, Saskatoon, and Maurice A. Clegg, Fort Saskatchewan, all of Canada, assignors to Sherritt Gordon Mines Limited, Toronto, Canada

Division of Ser. No. 31,709, Apr. 20, 1979. This application Aug. 11, 1980, Ser. No. 176,944

Int. Cl.³ B32B *15/00*

U.S. Cl. 428—677 **1 Claim**

1. A blank suitable for minting into a coin or similarly disc-shaped article comprising a disc-shaped steel core, an intermediate metal coating electroplated on and encasing the core, said intermediate metal being selected from the group consisting of nickel and zinc, and said intermediate metal coating having a thickness of at least about 0.005 mm on each opposed face of the core and a thickness on the peripheral edge of the core measured radially in the range of from about 2 to about 4 times the face thickness, and a copper coating electroplated on and encasing the intermediate coating and core, the copper coating having a thickness of at least about 0.05 mm on each opposed face of the core and a thickness on the peripheral edge of the core measured radially in the range of from about 2 to about 4 times the face thickness, the intermediate metal coating being metallurgically bonded to the core by a layer of interdiffused intermediate metal and steel, the copper coating being metallurgically bonded to the intermediate metal coating by a layer of interdiffused copper and intermediate metal, and the hardness of the steel core being less than about 65 on the Rockwell 30T hardness scale.

4,279,969

METHOD OF FORMING THIN NIOBIUM CARBONITRIDE SUPERCONDUCTING FILMS OF EXCEPTIONAL PURITY

Thomas L. Francavilla, Washington, D.C., and Stuart A. Wolf, Greenbelt, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 20, 1980, Ser. No. 122,945

Int. Cl.³ C23C *15/00*

U.S. Cl. 428—698 **8 Claims**

1. A method for the preparation of superconducting thin films of niobium carbonitride of exceptional purity, comprising:

assembling within a closed reactor a dielectric substrate and a pure niobium target;

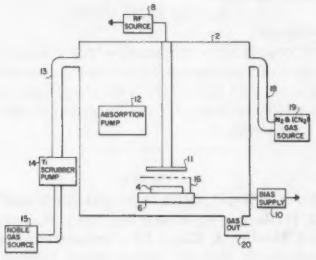
evacuating the reactor to a pressure of about 10^{-10} Torr, while heating the components contained within the reactor so as to substantially eliminate all volatile impurities therefrom;

admitting an inert gas into the reactor until the inert gas attains a pressure within the range of about 6 to 8×10^{-2} Torr;

heating the dielectric substrate to a temperature of 600° C. to 1200° C.;

initiating presputtering while protecting the substrate from any deposition with a protective cover;

admitting cyanogen gas or a nitrogen-cyanogen gas mixture at a substantially constant volumetric flow rate of about 10^{-6} Torr liters/sec into the reactor, wherein the cyanogen gas is admitted into the reactor at a constant flow rate which ranges from 10^{-9} to 10^{-6} Torr liters/sec;



removing the protective-covering of the dielectric substrate after a partial pressure of about 5 microns of reactant gas is obtained in the reactor;

applying a constant RF power density of about 10–20 watts/cm^2 to the niobium target in order to initiate reactive sputtering;

forming a thin NbCN film of a desired thickness;

cooling the reactor and the deposited film back to room temperature and pressure.

4,279,970

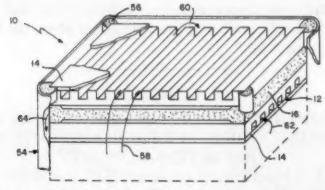
ELECTROCHEMICAL CELL INCLUDING RIBBED ELECTRODE SUBSTRATES

Richard D. Breault, Coventry, Conn.; Glen J. Goller, West Springfield, Mass.; Richard J. Roethlein, Stafford Springs, and Gilbert C. Sprecher, Bolton, both of Conn., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Feb. 20, 1980, Ser. No. 122,857

Int. Cl.^{3} H01M *2/08*

U.S. Cl. 429—35 **8 Claims**



1. In an electrochemical cell including an electrolyte retaining matrix layer located between and in contact with a pair of catalyst layers, a pair of substrates to be positioned in confronting engagement with said catalyst layers, respectively, each of said substrates comprising a gas porous main body having an overall outer periphery including opposite ends of opposite lengthwise sides, an inner face adapted for confronting engagement with one of said catalyst layers and an outer face including a ribbed section thereof which is provided for receiving reactant gas and which extends lengthwise from one end of said main body to the other end thereof between opposite lengthwise side portions of said main body, each of said lengthwise side portions including along its entire length between the opposite ends of said main body a channel extending inwardly therein from one of said inner or outer faces to but stopping short of the other of said faces so as to provide a web directly between said channel and said other face, each of said channels being filled with a gas impervious substance and each of said webs being impregnated with a gas impervious substance so as to provide a gas impervious seal along the entire length of each of said side portions and between the opposite faces thereof.

5. An electrochemical cell comprising an electrolyte retaining matrix layer located between and in contact with a pair of catalyst layers, a pair of substrates positioned in confronting relationship with said catalyst layers, respectively, each of said substrates including a gas porous main body having an overall outer periphery including opposite ends and opposite lengthwise sides, an inner face adapted for confronting engagement with one of said catalyst layers and an outer face including a ribbed section thereof which is provided for receiving reactant gas and which extends lengthwise from one end of said main body to the other end thereof between opposite lengthwise side portions of said main body, each of said lengthwise side portions including along its entire length between the opposite ends of said main body a channel therein extending inward from one of said faces to but stopping short of the other of said faces so as to provide a web directly between said channel and said other face, each of said channels being filled with a gas impervious substance and each of said webs being impregnated with a gas impervious substance so as to provide a gas impervious seal along the entire length of each of said side portions and between the opposite faces thereof.

4,279,971

ELECTROLYTE STRUCTURE WITH STRONTIUM TITANATE MATRIX FOR MOLTEN CARBONATE FUEL CELLS

Ronald H. Arendt, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 90,880, Nov. 5, 1979. This application Apr. 24, 1980, Ser. No. 143,173

Int. Cl.^{3} H01M *8/08*

U.S. Cl. 429—46 **1 Claim**

1. An improved molten carbonate fuel cell electrolyte structure consisting essentially of, based on the total weight of the electrolyte structure, from about 55% by weight to about 75% by weight of strontium titanate and about 25% by weight to about 45% by weight of alkali metal carbonate electrolyte, said strontium titanate having a crystallite morphology which is at least significantly spherical and which has an average size ranging from about 0.1 micron to about 1 micron, said strontium titanate being selected from the group consisting of stoichiometric strontium titanate, strontium-rich titanate and mixtures thereof, said alkali carbonate being selected from the group consisting of a ternary lithium-potassium-sodium carbonates composition, a binary lithium-potassium carbonates composition, a binary lithium-sodium carbonates composition, a binary sodium-potassium carbonates composition and mixtures thereof, said electrolyte structure being at least substantially pore-free when said electrolyte is in molten form.

4,279,972

NON-AQUEOUS ELECTROLYTE CELL

Peter R. Moses, Windham, N.H., assignor to Duracell International Inc., Bethel, Conn.

Filed Aug. 27, 1979, Ser. No. 70,198

Int. Cl.^{3} H01M *10/44*

U.S. Cl. 429—50 **18 Claims**

1. A stabilized electrochemical cell comprising an anode comprised of a metal above hydrogen in the EMF series, a water retaining metal oxide cathode having water in normally detrimental amounts up to 2% by weight thereof retained therein, a nonaqueous electrolyte solvent and an electrolyte salt dissolved in said solvent characterized in that said solvent and said salt are substantially unreactive with respect to the formation of a gaseous reaction product in the presence of said water and wherein said salt is selected from the group consisting of lithium salts of PF_6^-, $CF_3SO_3^-$ and BF_4^-.

4,279,973
ELECTROCHEMICAL CELL

Hanumanthiya V. Venkatasetty, Burnsville, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

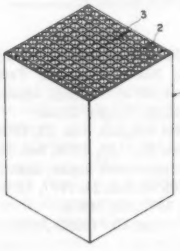
Filed Apr. 14, 1980, Ser. No. 139,933
Int. Cl.³ H01M 6/14
U.S. Cl. 429—101 **6 Claims**

1. A high rate electrochemical cell, comprising:
a lithium anode;
a cathode and a depolarizer electrolyte of an electrolyte amount of aluminum chloride dissolved in thionyl chloride; and
a conductivity increasing amount of gallium chloride.

4,279,974
SOLID ELECTROLYTIC MATERIAL AND USE THEREOF

Shinji Nishio, Nagoya, Japan, assignor to NGK Spark Plug Co., Ltd., Nagoya, Japan

Division of Ser. No. 939,109, Sep. 1, 1978, abandoned. This application Mar. 19, 1980, Ser. No. 131,721
Claims priority, application Japan, Sep. 2, 1977, 52/106193; Jan. 26, 1978, 53/6745; Feb. 23, 1978, 53/19029
Int. Cl.³ H01M 4/36
U.S. Cl. 429—104 **9 Claims**



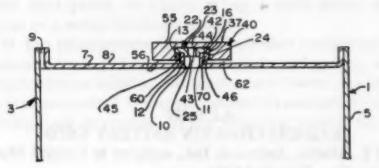
1. A storage battery comprising a partitioning membrane, an anolyte consisting of molten sodium metal and a catholyte selected from the group consisting of sodium sulfide and a mixture of antimony chloride, aluminum chloride and sodium chloride, wherein the partitioning membrane has a honeycomb structure formed by a plurality of unit tubes arranged in close configuration, the cross-sectional shape of said unit tubes being polygonal, said partitioning membrane with said honeycomb structure consisting of fluid-impermeable alkali ion-conductive material selected from β-alumina (β-Al_2O_3) or β-alumina containing β''-alumina (β''-Al_2O_3), and said partitioning membrane with said honeycomb structure providing alternating anode and cathode cells, each separated by said membrane, and thus providing a plurality of unit cells, said unit cells being connected in series or in parallel.

4,279,975
HERMETIC SEAL CLOSURE

Benjamin Bowsky, Warren County, Ohio, assignor to Emerson Electric Co., St. Louis, Mo.

Filed Jun. 9, 1980, Ser. No. 157,900
Int. Cl.³ H01M 2/02
U.S. Cl. 429—181 **10 Claims**

1. In a battery having a sealed case containing corrosive liquid, said case including an end wall with an aperture in it, the improvement comprising an axially out turned lip in said end wall, said lip having an outer side wall, an inner side wall and a free radial surface between said side walls, said inner side wall defining said aperture in said end wall; a washer of material substantially impervious and resistant to said corrosive liquid, said washer having a wall part with an under surface projecting radially beyond the perimeter of said lip and covering the free radial surface of said lip and positioning means for locating said washer with respect to said lip, said washer having an opening extending axially through it; a terminal cap of electrically conductive material having a cavity defined by an inner side wall and a central web spanning the boundry defined by said inner side wall, said inner side wall embracing said washer and projecting axially beyond said washer toward said case end wall but spaced axially from said case end wall, and

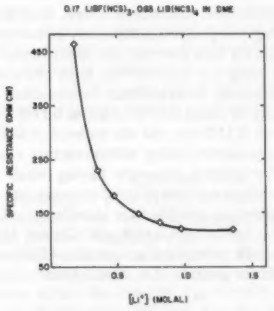


bonding material bonded to and extending hermetically uninterruptedly through space between the said outer side wall of the said lip and the inner side wall of said terminal cap and between those said walls and said under surface of the said washer, whereby the said cap, washer and case are bonded to one another, and the case is hermetically sealed at said terminal cap.

4,279,976
PSEUDOHALIDE-CONTAINING SALTS FOR ELECTROLYTES OF ALKALI-METAL ELECTROCHEMICAL DEVICES

Lawrence P. Klemann, Somerville, and Gerald H. Newman, Westfield, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jul. 7, 1980, Ser. No. 166,066
Int. Cl.³ H01M 6/14
U.S. Cl. 429—197 **13 Claims**



1. An electrolyte for an alkali-metal electrochemical device, comprising:
(a) an organic solvent selected from a group consisting of ethers, esters, sulfones, organic sulfites, organic sulfates, organic nitrites and organic nitro compounds; and
(b) at least one electrolytically active alkali-metal complex anion salt having the formula:

$$ZMR_xQ_y$$

wherein Z is an alkali metal;
wherein M is an element selected from a group consisting of B, Al, P and As;
wherein Q is at least one pseudohalide selected from a group consisting of: SCN^-, $SeCN^-$, CN^- and OCN^-;
wherein R is selected from a group consisting of: heteroa-

tom-containing groups bonded to M, the core element, through the heteroatom site, aryls, alkaryls, F, Cl, Br, fluorine-substituted aryls, and fluorine-substituted alkaryls; and

wherein x and y are positive integers, a sum of x plus y being equal to one plus the valence of the core element M, and further,

wherein x is zero or a positive integer.

4,279,977

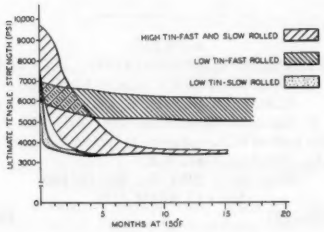
LEAD-CALCIUM-TIN BATTERY GRID

Robert C. Matter, Anderson, Ind., assignor to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 940,993, Sep. 11, 1978, Pat. No. 4,228,580, which is a continuation-in-part of Ser. No. 886,078, Jun. 20, 1978, abandoned. This application May 27, 1980, Ser. No. 153,335

Int. Cl.³ H01M *4/66*

U.S. Cl. 429—245 **1 Claim**



1. In an automotive, maintenance-free, lead-acid storage battery including leady, electrochemically active material and supporting grids for said material, the improvement comprising said grids: being less than 0.07 in. thick and comprising a fine-grained, wrought, recrystallized, lead-calcium alloy consisting essentially of about 0.07% to about 0.11% calcium, no more than about 0.35% tin and the balance principally lead; displaying a corrosion-resisting microstructure comprising a substantially fine-grained structure having small islands of substantially uniform-calcium-content structureless phase dispersed throughout a pearlite-like lamellar-structure phase having alternate layers of Ca-rich and Ca-lean lamella; and manifesting a tensile strength of at least about 5000 psi which is stable at 150° F. for periods of at least 1 year.

4,279,978

BATTERY SEPARATOR EMPLOYING ZINC SELECTIVE ADDITIVE MATERIALS

Mark G. Dodin, Danbury, and Allen Charkey, Brookfield, both of Conn., assignors to Energy Research Corporation, Danbury, Conn.

Filed May 23, 1980, Ser. No. 152,725

Int. Cl.³ H01M *2/16*

U.S. Cl. 429—248 **18 Claims**

1. A battery separator for use with battery having an alkaline electrolyte and an electrode comprised of zinc active material, said separator including a polyamide constituent, a wettable polymeric constituent and a filler material reactive with zinc.

4,279,979

NONWOVEN FIBROUS SUBSTRATE FOR BATTERY SEPARATOR

Arthur L. Benson, Suffield, and David A. Jordan, Simsbury, both of Conn., assignors to The Dexter Corporation, Windsor Locks, Conn.

Filed Nov. 9, 1978, Ser. No. 959,110

Int. Cl.³ H01M *2/16*

U.S. Cl. 429—254 **10 Claims**

1. A nonwoven fibrous web material suited for use as a substrate for an alkaline battery separator comprising a light weight, porous, heat bonded, synthetic organic sheet material resistant to degradation upon prolonged exposure at elevated temperatures to a highly concentrated alkaline environment, said fibrous web material having a basis weight of less than 50 gsm and a thickness of less than about 200 microns, a major fibrous component of the web being a synthetic thermoplastic polyolefin fiber having a microfibrillar structure comprised of microfibrils similar to wood pulp, a minor fibrous component of the web being a polyamide fiber having a fiber length greater than about 6 mm, the heat bonding by partial fusion of the microfibrillar polyolefin being sufficient to impart to the sheet material a wet tensile strength of at least 400 g/in. width while retaining an air permeability greater than about 50 liters/min., said substrate exhibiting excellent receptivity to pore-forming battery separator coatings.

4,279,980

ELECTROPHOTOGRAPHIC SENSITIZING SCREEN

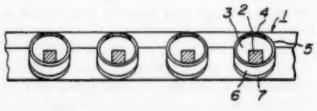
Masaji Nishikawa; Norio Amemiya; Tadahiro Yasuda, and Shigeru Nakayama, all of Hachioji, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Division of Ser. No. 918,823, Jun. 22, 1978, abandoned. This application Nov. 28, 1979, Ser. No. 98,316

Claims priority, application Japan, Jun. 24, 1977, 52/74969; Jun. 24, 1977, 52/74970; Jun. 24, 1977, 52/74971; Jun. 24, 1977, 52/74972; Jun. 24, 1977, 52/74973

Int. Cl.³ G03G *5/04*

U.S. Cl. 430—68 **2 Claims**



1. An electrographic sensitizing screen being provided with a conductive mesh having at least an insulating layer, a successively formed conductive layer, a photosensitizing layer on said conductive mesh opposite said insulating layer and a thin dielectric surface layer associated therewith; wherein: said conductive mesh is formed of a metal thin sheet by an etching process so as to leave an outer peripheral portion of said sheet as a frame; and a number of convex portions each having a size larger than an aperture pitch of said mesh formed near boundaries between said outer peripheral portion and mesh portions constituting said mesh.

4,279,981

ELECTROPHOTOGRAPHIC ELEMENTS CONTAINING TRISAZO COMPOUNDS

Masafumi Ohta, Yokohama; Kiyoshi Sakai, Tokyo; Mitsuru Hashimoto, Hino; Akio Kozima, Yokohama, and Masaomi Sasaki, Kawasaki, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Apr. 18, 1978, Ser. No. 897,508

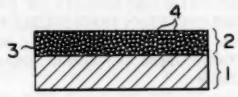
Claims priority, application Japan, Apr. 22, 1977, 52/45812; Apr. 25, 1977, 52/46859

Int. Cl.³ G03G *5/06*

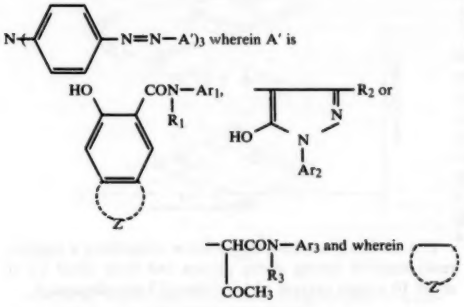
U.S. Cl. 430—73 **66 Claims**

1. An electrophotographic material which comprises an

electrically conductive support and a photosensitive layer



formed thereon, said photosensitive layer consisting essentially of fine particles of a trisazo compound having the formula



is a fused ring selected from the group consisting of benzene ring, bromobenzene ring, naphthalene ring, indole ring, carbazole ring and benzofuran ring; Ar_1 is a member selected from the group consisting of phenyl, methylphenyl, methoxyphenyl, chlorophenyl, nitrophenyl, ethoxyphenyl, dimethylphenyl, methylchlorophenyl, methoxychlorophenyl, methoxybromophenyl, methylmethoxyphenyl, dimethoxyphenyl, dimethoxychlorophenyl, dimethylaminophenyl, cyanophenyl, carboxyphenyl, benzenesulfonic acid sodium salt, tert-butoxyphenyl, naphthyl, methoxydibenzofuryl and carbazolyl; each of Ar_2 and Ar_3 is a member selected from the group consisting of phenyl, naphthyl, nitrophenyl, benzenesulfonamide, benzenesulfonic acid, trichlorobenzenesulfonic acid, methylphenyl, methoxyphenyl, chlorophenyl, dinitrophenyl, cyanophenyl, dimethylaminophenyl and acetylaminophenyl; each of R_1 and R_3 is a member selected from the group consisting of hydrogen, methyl, ethyl, phenyl and chlorophenyl; and R_2 is selected from the group consisting of methyl, carboxyl and $COOC_2H_5$; and a resinous binder.

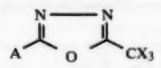
4,279,982

PHOTOSENSITIVE COMPOSITIONS

Masayuki Iwasaki; Akira Nagashima, both of, Shizuoka, and Shigeru Sato, Odawara, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Dec. 6, 1979, Ser. No. 101,040
Claims priority, application Japan, Dec. 8, 1978, 53-152150
Int. Cl.³ G03C *1/72, 1/52, 1/68*
U.S. Cl. 430—170 **24 Claims**

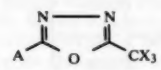
1. A printout composition for providing printout faculty comprising the 2-trihalomethyl-5-aryl-1,3,4-oxadiazole compound represented by the following general formula and a discoloring agent, said discoloring agent being an arylamine inherently colorless but being colored upon reaction with the photodecomposition product of the compound of the formula, or said discoloring agent being originally colored but is discolored upon reaction with said photodecomposition product and being selected from the group consisting of a diphenylmethane series dye, a triphenylmethane series dye, a thiazine series dye, an oxazine series dye, a xanthene series dye, an anthraquinone series dye, an imino naphtholquinone series dye, and an azomethine series dye:



(I)

wherein X represents a chlorine atom or a bromine atom and A represents a phenyl group, a naphthyl group or a phenyl or naphthyl group substituted by a halogen atom, an unsubstituted alkyl group, an alkoxy group, a nitro group, a cyano group or a methylenedioxy group.

21. In a photopolymerizable composition comprising a vinyl monomer having at least two terminal vinyl groups, a photopolymerization initiator, and a polymeric binder, the improvement characterized in that said photopolymerization initiator is a compound represented by the following general formula:



(I)

wherein X represents a chlorine atom or bromine atom and A represents a phenyl group, a naphthyl group or a phenyl or naphthyl group substituted by a halogen atom, an unsubstituted alkyl group, an alkoxy group, a nitro group, a cyano group or a methylenedioxy group.

4,279,983

SILVER IMAGE STABILIZATION

Ruth C. Bilofsky, Lexington, and Mara O. Nestle, Natick, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 33,003, Apr. 24, 1979, abandoned. This application Apr. 24, 1980, Ser. No. 143,439
Int. Cl.³ G03C *5/54, 5/38, 1/48, 7/00*
U.S. Cl. 430—228 **26 Claims**

25. An additive color diffusion transfer film unit which comprises a transparent support carrying, in order, an additive color screen, a layer comprising palladium metal silver-precipitating nuclei, a photosensitive silver halide emulsion layer; and an antihalation layer; wherein said antihalation layer includes a stabilizing compound consisting of a noble metal complexed with a ligand, said ligand being adapted to hydrolyze in aqueous alkali to provide a diffusible complex of said noble metal.

4,279,984

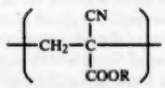
POSITIVE RESIST FOR HIGH ENERGY RADIATION

Shunsuke Matsuda; Soji Tsuchiya; Masami Honma, all of Kawasaki, and Gentaro Nagamatsu, Tokyo, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka and Fuji Chemicals Industrial Co., Ltd., Tokyo, both of, Japan

Continuation of Ser. No. 804,163, Jun. 6, 1977, abandoned. This application Dec. 28, 1978, Ser. No. 974,003
Claims priority, application Japan, Jun. 16, 1976, 51/71535
Int. Cl.³ G03C *1/68;* **B05D** *3/06;* **G03C** *1/70;* **C08F** *22/32*
U.S. Cl. 430—270 **5 Claims**

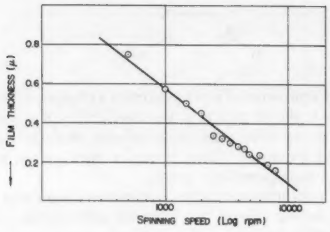
1. A positively imaged resist film, said film consisting essentially of a polymer selected from the group consisting of

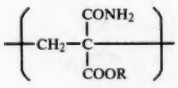
(A) a homopolymer consisting of structural units of the formula



(I),

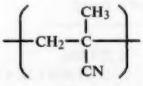
(B) a homopolymer consisting of structural units of the formula





(II),

(C) a copolymer of (I) and (II) and
(D) a terpolymer consisting of units (I) and (II) and



(III)

(where R represents an alkyl group with 1 to 4 carbon atoms), wherein the molar ratio of (I):(II):(III) in said copolymer or terpolymer is 1.0 to 0.5:0 to 0.2:0 to 0.5 and wherein the average molecular weight is 50,000 to 1,000,000.

4,279,985

PHOTOPOLYMER IMAGING USING EPOXY AND BROMINE CONTAINING ETHYLENICALLY UNSATURATED COMPOUNDS

Saburo Nonogaki, Tokyo, and Yoshio Hatano, Hachioji, both of Japan, assignors to Nippon Telegraph and Telephone Public Corporation and Hitachi, Ltd., both of, Japan

Continuation-in-part of Ser. No. 768,728, Feb. 15, 1977, abandoned. This application Apr. 27, 1979, Ser. No. 33,842
Claims priority, application Japan, Feb. 18, 1976, 51-16029
Int. Cl.[2] G03C *1/68*
U.S. Cl. 430—280 **10 Claims**

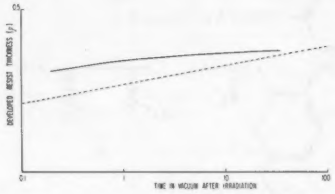
1. A method for forming radiation images comprising the steps of (a) preparing a substrate, (b) forming on said substrate a radiation-sensitive film composed of at least one polymeric compound selected from the group consisting of brominated and epoxidized polymers of butadiene, brominated and epoxidized copolymers of butadiene, brominated and epoxidized polymers of isoprene, brominated and epoxidized copolymers of isoprene, brominated products of copolymers of butadiene with addition-polymerizable compounds containing an epoxy group, brominated products of copolymers of isoprene with addition-polymerizable compounds containing an epoxy group and epoxidized products of copolymers of one of butadiene and isoprene with addition-polymerizable compounds containing at least one bromine atom, wherein the degree of epoxidation of the polymeric compound is about 17 to about 70% and the degree of bromination of the polymeric compound is about 7 to about 50%, the value of the sum of the epoxidation degree and bromination degree being lower than 100%, (c) exposing at least a part of said film to radiations to thereby render said part of the film solvent-insoluble, and (d) removing solvent-soluble parts of said film by development.

4,279,986

NEGATIVE RESIST AND RADICAL SCAVENGER COMPOSITION WITH CAPABILITY OF PREVENTING POST-IRRADIATION POLYMERIZATION

Yoshitake Ohnishi; Masaki Itoh; Kenji Mizuno, and Hiroshi Gokan, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 911,580, Jun. 1, 1978, abandoned. This application Jul. 23, 1979, Ser. No. 59,845
Claims priority, application Japan, Jun. 1, 1977, 52/65082; Jul. 6, 1977, 52/81318; Jul. 6, 1977, 52/81319
Int. Cl.[3] G03C *1/68*
U.S. Cl. 430—280 **5 Claims**



1. A radiation sensitive composition comprising a negative resist material having epoxy groups and from about 2.5 to about 10 weight percent of 1,1-diphenyl-2-picrylhydrazyl.

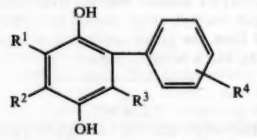
4,279,987

LIGHT-SENSITIVE, DIRECT POSITIVE SILVER HALIDE PHOTOGRAPHIC MATERIAL

Keiji Ogi; Takashi Sasaki, and Yasuo Tosaka, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Nov. 13, 1979, Ser. No. 93,734
Claims priority, application Japan, Nov. 14, 1978, 53/140136
Int. Cl.[3] G03C *5/24, 1/485*
U.S. Cl. 430—409 **11 Claims**

1. A direct positive photographic material comprising a light-sensitive internal latent image type silver halide emulsion layer coated on a support, characterized by containing a compound of the general formula



wherein R^1, R^2 and R^3 which may be the same or different represent independently a hydrogen or halogen atom or a substituted or unsubstituted alkyl or aryl group, R^4 represents a hydrogen or halogen atom or a substituted or unsubstituted alkyl, alkoxy, acyl, amino, aryl, aryloxy, nitro, hydroxy, carboxy or alkoxycarbonyl group.

4,279,988

PHOTOGRAPHIC FILM UNIT

William P. Ewald, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

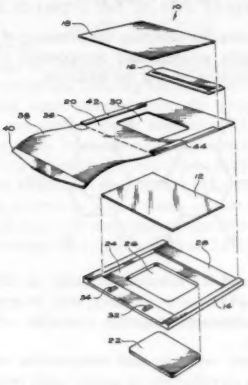
Filed Jan. 15, 1980, Ser. No. 112,269
Int. Cl.[3] G03C *1/48, 1/76*
U.S. Cl. 430—499 **9 Claims**

1. A photographic film unit suitable for exposure and processing with processing liquid, said unit comprising:

a substantially rigid mount having front and rear surfaces and a central opening therethrough;

a film element supported in the opening and spaced from the rear surface of said mount, said film element being viewable, after it has been exposed and processed, by light transmitted therethrough;

a strippable cover sheet on said mount extending across and in front of said film element to form a confined region between said film element and said sheet for receiving



processing liquid, said cover sheet being adapted to transmit light to said film element;

means for admitting processing liquid between said film element and said cover sheet; and

a film support plug in said central opening between said film element and the rear surface of said mount for inhibiting displacement of said film element by the processing liquid.

4,279,989

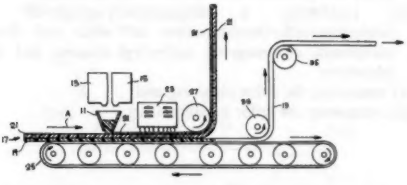
GELATIN-EPOXY SHEET MATERIALS

Jerome Drexler, Los Altos Hills, and Carl R. Betz, Los Altos, both of Calif., assignors to Drexler Technology Corporation, Mountain View, Calif.

Continuation-in-part of Ser. No. 951,359, Oct. 16, 1978, abandoned. This application Nov. 30, 1979, Ser. No. 98,830

Int. Cl.³ G03C *1/78*

U.S. Cl. 430—531 **5 Claims**



1. A gelatin-epoxy sheet material comprising,

a uniformly thick layer of gelatin having on a first side a directly contacting, bonding, uniformly thick layer of fluid-setting epoxy plastic.

4,279,990

COLOR PHOTOGRAPHIC MATERIALS

Kozo Aoki; Nobuo Furutachi, and Satoru Sawada, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

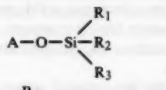
Filed Sep. 10, 1980, Ser. No. 185,848

Claims priority, application Japan, Sep. 10, 1979, 54-116283

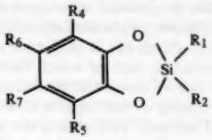
Int. Cl.³ G03C *1/40*

U.S. Cl. 430—551 **11 Claims**

1. A silver halide color photographic material comprising a photographic layer containing at least one of the compounds represented by the formula (I) or (II)

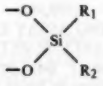


(I)



(II)

wherein A represents an aryl group; R_1, R_2 and R_3 each represents hydrogen, a halogen atom, an alkyl group, or an aryl group except that R_1, R_2, and R_3 cannot all be hydrogen; R_4 and R_5 each represents hydrogen, a halogen atom, an alkyl group, an aryl group, an alkoxy group, an alkylthio group, an acyl group, an aryloxy group, a carboxy group, a sulfo group, or a hydroxy group; and R_6 and R_7 each represents hydrogen, a halogen atom, an alkyl group, an aryl group, an alkoxy group, an aryloxy group, an alkylthio group, an acyl group, or a hydroxy group; or R_6 and R_7 together form an



group or a 5-membered or 6-membered carbocyclic or heterocyclic ring.

4,279,991

PROCESS AND APPARATUS FOR PREPARING MULTI-COMPONENT REAGENT SOLUTIONS

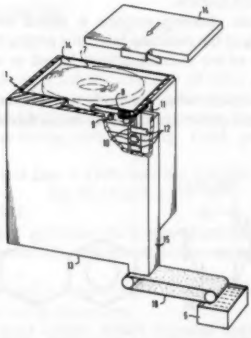
Alexander Hagen; Hermann Edelmann, both of Tutzing, and Sigmar Klose, Berg, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Waldhof, Fed. Rep. of Germany

Filed Dec. 4, 1979, Ser. No. 100,168

Claims priority, application Fed. Rep. of Germany, Dec. 7, 1978, 2852994

Int. Cl.³ C12Q *1/00*; C12M *1/00*

U.S. Cl. 435—4 **19 Claims**



1. A process for the preparation of a multi-component reagent solution, comprising:

providing each of a plurality of individual reagent components in a redissolvable form on a separate solid carrier

capable of being formed into discrete sub-elements carrying a defined amount of a reagent component of said plurality of reagent components; simultaneously forming sub-elements from at least one solid carrier; and introducing the sub-elements into a common reagent solvent to dissolve the associated reagent components and form the reagent solution.

8. Apparatus for the preparation of reagent solutions for analytical purposes containing a plurality of individual components which apparatus comprises a magazine containing a plurality of carrier materials each of which carries, per unit volume or weight, a defined amount of an individual reagent component, a proportioning device capable of measuring and separating off defined amounts from several carrier materials, conveyor means for transporting the separated-off amounts of carrier to a solvent container, and control means which actuates and controls said proportioning device for any specific reagent composition.

4,279,992

SPECIFIC BINDING ASSAY EMPLOYING AN ENZYME-CLEAVABLE SUBSTRATE AS LABEL

Robert C. Boguslaski; John F. Burd, and Robert J. Carrico, all of Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Continuation-in-part of Ser. No. 886,094, Mar. 13, 1978, Pat. No. 4,226,978. This application Oct. 23, 1979, Ser. No. 87,819

Int. Cl.³ G01N *33/54;* **C12Q** *1/34, 1/44;* **C12N** *9/96*

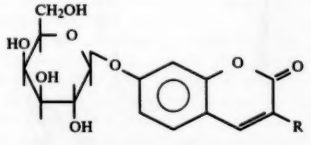
U.S. Cl. 435—7 **50 Claims**

1. In a homogeneous specific binding assay method for determining a ligand in a liquid medium,

wherein a reaction mixture is formed by combining said liquid medium with reagent means, including a conjugate having a label component and a binding component, to form a binding reaction system having a bound-species and a free-species of said labeled conjugate, said label component of the conjugate comprising an enzyme substrate-active portion and an indicator portion whereby the conjugate is cleavable by an enzyme to produce a detectable indicator product, said labeled conjugate being substantially inactive as a substrate for said enzyme when in said bound-species,

wherein said cleaving enzyme is added to said reaction mixture and the resulting indicator product measured as a function of the amount of said ligand in said liquid medium,

the improvement which comprises employing as said label component of the conjugate, a residue having the formula:



wherein R is a linking group through which said residue is covalently bound to said binding component, and employing β-galactosidase as said cleaving enzyme whereby the β-galactosyl group in said residue can be cleaved to release a detectable dye product.

4,279,993

INDICATOR COMPOSITION AND TEST DEVICE CONTAINING AMINE OXIDE, AND METHOD OF USE

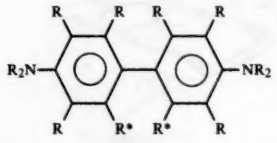
Thomas A. Magers, 63251 Mulberry Rd., South Bend, Ind. 46614, and David L. Tabb, 213 N. Ward St., Elkhart, Ind. 46514

Filed Nov. 13, 1979, Ser. No. 93,492

Int. Cl.³ C12Q *1/54*

U.S. Cl. 435—14 **45 Claims**

1. In a composition for detecting the presence of a constituent in a test sample wherein said composition comprises a benzidine-type indicator having the structure



in which the R and R* substituents, same or different, are hydrogen, lower alkyl, lower alkyloxy, aryl, or aryloxy, or in which the R* substituents together comprise $—CH_2—_n$ in which n is 1 or 2,

the improvement wherein said composition additionally comprises, as an enhancer, an amine oxide compound.

4,279,994

LIPASE DETERMINATION METHOD AND REAGENT

Cleo L. Huang, Carmel, Ind., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jul. 13, 1979, Ser. No. 57,525

Int. Cl.³ C12Q *1/44*

U.S. Cl. 435—19 **5 Claims**

1. In a method of determining lipase activity in biological fluids by incubating a biological fluid specimen in the presence of an S-acyl compound, a chromogenic sulfhydryl reagent and a carboxyesterase inhibitor and measuring the resulting color, the improvement which comprises:

(a) carying out said incubation in the presence of a diagnostically-acceptable cholinesterase/-pseudocholinesterase inhibitor in a concentration sufficient to inhibit cholinesterase and pseudocholinesterase in the specimen;

(b) incubating a diagnostically-acceptable S-(aminoloweralkyl)isothiuronium salt with said S-acyl compound, chromogenic sulfhydryl reagent and said inhibitors;

(c) measuring the color obtained; and

(d) comparing the color measurements.

4,279,995

SELECTIVE SALMONELLA CARBOHYDRATE AND MEDIUM CONSTRUCTED THEREFROM

Leodis V. Woods, St. Louis; Paul Stassi, Hazelwood, and Ralph A. Wilkinson, Florissant, all of Mo., assignors to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Dec. 3, 1979, Ser. No. 99,649

Int. Cl.³ C12Q *1/10*

U.S. Cl. 435—38 **13 Claims**

1. A process of selectively differentiating Salmonella spp., Arizona spp., and some of the *Citrobacter freundii* from other members of the Enterobacteriaceae family in a liquid medium including adding 2-Deoxy-D-Ribose to the liquid medium as the carbohydrate source in an amount sufficient to differentiate Salmonella spp., Arizona spp., and some of the *Citrobacter freundii* from other members of the Enterobacteriaceae family.

4,279,996

KERATIN HYDROLYZATE USEFUL AS HAIR FIXATIVES

Issei Yoshioka, Hirakata, and Yoichi Kamimura, Osaka, both of Japan, assignors to Seiwa Kasei Co., Ltd., Osaka, Japan

Filed Sep. 25, 1979, Ser. No. 78,850
Claims priority, application Japan, Oct. 9, 1978, 53-124289; Dec. 1, 1978, 53-149279; Dec. 29, 1978, 53-163085
Int. Cl.[3] C12P *21/06*
U.S. Cl. 435—69 7 Claims

1. A process for preparing a water-soluble keratin hydrolyzate which comprises reducing keratin in an aqueous solution of a reducing agent selected from the group consisting of mercaptans and sulfides under alkaline conditions, removing the reducing agent from the resulting reduction product and then subjecting the reduction product to enzymatic hydrolysis in an aqueous medium in the presence of an enzyme capable of hydrolyzing protein, to give a water-soluble keratin hydrolyzate having at least two mercapto groups in one molecule and having an average molecular weight of 2,000 to 20,000.

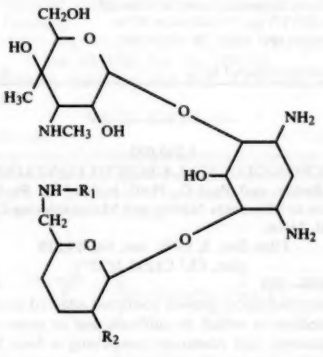
4,279,997

PROCESS FOR PRODUCTION OF AMINOGLYCOSIDE ANTIBIOTICS

Yoshihiko Oka, Kawagoe; Hitoshi Ishida, Ageo; Moto Morioka, Niiza; Yoso Numusaki, Ageo; Tsutomu Yamafuji, Tokyo; Takashi Osono, Tokyo, and Hamao Umezawa, Tokyo, all of Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

Division of Ser. No. 793, Jan. 3, 1979, Pat. No. 4,209,511. This application Sep. 5, 1979, Ser. No. 72,654
Claims priority, application Japan, Jan. 13, 1978, 53/3188
Int. Cl.[3] C12P *19/48*
U.S. Cl. 435—80 4 Claims

1. A process for producing aminoglycoside antibiotics represented by the formula



wherein R_1 is a hydrogen atom or a methyl group and R_2 represents an amino group or a hydroxyl group, or their pharmacologically acceptable acid addition salts, which comprises cultivating a Gentamicin producing strain of Micromonospora species or a mutant thereof in a medium containing Kanamycin A or Kanamycin B.

4,279,998

REGENERABLE INSOLUBLE SUPPORT FOR PROTEIN IMMOBILIZATION

Khemchand M. Shahani, Lincoln; Frederick W. Wagner, Walton, both of Nebr., and Arun Kilara, State College, Pa., assignors to The Board of Regents of the University of Nebraska, Lincoln, Nebr.

Continuation-in-part of Ser. No. 697,240, Jun. 17, 1976, abandoned. This application Jun. 12, 1979, Ser. No. 47,727
Int. Cl.[3] C12N *11/00, 11/16, 11/10, 11/06*
U.S. Cl. 435—174 12 Claims

1. A process of preparing a solid insoluble carrier for replaceably immobilizing proteins, comprising the steps of:

coupling to said solid insoluble carrier, chemical arms including diazo linkages within them and a group that forms a bond with functional groups of the proteins; and

the step of coupling comprising covalently coupling one end of chemical arms to a solid insoluble chemical carrier wherein each coupled arm has a length of between 5 and 15 angstrom units from said one end to the other, each arm has therein between its ends a diazo linkage and each arm has adjacent the diazo linkage a phenolic compound containing a carboxylic acid group or an aromatic compound containing a carboxylic acid group on its other end that forms a covalent bond to an α-amino group of the protein remote from the active center of the protein under a predetermined set of chemical conditions.

4,279,999

MEANS FOR ACCELERATING PRECIPITATION IN IMMUNOASSAY AND IMMUNOASSAY METHOD

Giorgio Ricci, Rome, Italy, assignor to Biodata S.p.A., Italy

Filed Jul. 20, 1978, Ser. No. 926,703
Claims priority, application Italy, Jul. 27, 1977, 50459 A/77
Int. Cl.[3] C12N *9/00*; G01N *33/54*
U.S. Cl. 435—183 3 Claims

1. A serum free serum factor capable of accelerating precipitation during radioimmunoassay having the following chemical-physical characteristics:

(a) a molecular weight higher than 50,000,

(b) being of the Euglobulin type completely insoluble in distilled water,

(c) having an electrophoretic mobility which is the same as serum alpha or beta globulins,

(d) not assimilated to any component of the serum complement,

(e) homogeneous on Sephadex G-100,

(f) extracted by dialysis from animal serum or anti-serum, and

(g) being thermolabile.

4,280,000

METHOD FOR OBTAINING MOLD SPORE MATERIAL

Peter P. Kozak, Jr., Santa Ana, and Janet M. Gallup, Garden Grove, both of Calif., assignors to Cummins, Kozak and Gillman and Janet Gallup, both of Orange, Calif., part interest to each

Filed Jan. 7, 1980, Ser. No. 110,203
Int. Cl.[3] C12N *3/00*
U.S. Cl. 435—242 13 Claims

1. A method of obtaining mold spore material from a mold colony which includes mold spores and mycelia, said method comprising:

providing a porous barrier on a medium which supports growth of the mold colony;

growing a mold colony which includes mold spores and mycelia on the medium to provide the mold spores and mycelia on one side of the barrier which is remote from the medium and mycelia in the medium and on the other side of the barrier;

removing the barrier from the medium, said barrier having

at least some of the mold spores and mycelia on said one side of the barrier;

drying the mold spores and mycelia which are on the removed barrier;

removing at least some of the mold spores and mycelia from said one side of the barrier whereby said step of removing, separates the removed mold spores and mycelia from the mycelia on said other side of said barrier; and

separating the mold spores from at least major portions of the mycelia removed from the barrier to thereby obtain the mold spore material, said step of separating including sieving the mold spores and mycelia removed from the barrier.

4,280,001

BIOLOGICALLY PURE CULTURE

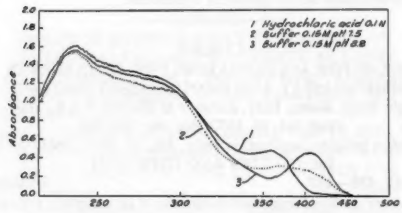
Hermes Pagani; Francesco Parenti; Carolina Coronelli, and Giorgio Tamoni, all of Milan, Italy, assignors to Gruppo Lepetit S.p.A., Milan, Italy

Division of Ser. No. 802,215, May 31, 1977, Pat. No. 4,100,273. This application Apr. 7, 1978, Ser. No. 894,221

Claims priority, application United Kingdom, Jun. 29, 1976, 26934/76

Int. Cl.³ C12N *1/20*; C12R *1/045*

U.S. Cl. 435—253 **1 Claim**



1. A biologically pure culture of the microorganism strain *Actinoplanes sarveparensis* CBS No. 305.76, said culture being capable of producing antibiotic L 13365 in a recoverable quantity upon aerobic fermentation of assimilable sources of carbon, nitrogen and inorganic salts, said antibiotic having the following characteristics:

(a) Melting point: 210° C.;

(b) Approximate elemental composition of 51.35 percent carbon, 5.05 percent hydrogen, 10.50 percent nitrogen, 11.05 percent sulfur and 22.05 percent oxygen;

(c) Ultraviolet spectrum: characteristic ultraviolet absorption bands in the following

solvent systems Solvent	γ_{max} (nm)	$E_{1cm}^{1\%}$
Hydrochloric acid		
0.1N	360	103
	290 (shoulder)	
	237	326
Buffer 0.15 M	408 (shoulder)	
pH 7.5	378	67
	290 (shoulder)	
	237	326
Buffer 0.15 M	408	99
pH 8.8	290 (shoulder)	
	238	336

(d) Infrared spectrum: characteristic infrared absorption bands in nujol at the following frequencies (cm^{-1}): 3400 (shoulder), 3350, 3200 (shoulder), 3100 (sharp), 2930 and 2870 (nujol), 2800–2400, 2380 (atmospheric carbon dioxide), 1750 (sharp), 1670 (sharp), 1620 (sharp), 1540 (sharp), 1480 (sharp), 1460 and 1380 (nujol), 1420 (sharp), 1340 (sharp), 1320 (sharp), 1280 (sharp), 1240 (sharp), 1195 (sharp), 1170 (sharp), 1145 (sharp), 1120 (sharp), 1075 (broad), 1015 (sharp), 990 (sharp), 865 (sharp), 840 (sharp), 800 (sharp), 770 (sharp), 755 (sharp), 740 (sharp), 720 (nujol);

(e) Specific rotation: $[\alpha]_{436}^{25} = +125°$ (C=0.8 percent in methanol:chloroform 1:1);

(f) Solubility: Soluble in dimethylsulfoxide, dimethylformamide and in chloroform/methanol mixtures. Slightly soluble in chloroform, methanol, methanol/ethyl acetate mixtures, sodium bicarbonate solutions and glacial acetic acid; insoluble in water and in the other common organic solvents;

(g) Characteristic reactions:

Fehling	positive
Tollens	positive
$KMnO_4$	positive
H_2SO_4 conc.	dark brown color
Ninhydrin	negative
$FeCl_3$	positive
Millon	negative
Schiff	negative
Anthrone	positive
Folin Ciocalteau	negative
Elson Morgan	negative

(h) Ionizable functions: an ionizable function potentiometrically evidenced with $pK_a = 7.8$ (methylcellosolve:water 4:1);

(i) R.F. values: chromatography on Whatman paper No. 1; Visualization of the spots by microbiological development on *Staphylococcus aureus*

Eluting System	Rf value
Buffer pH 6.0 saturated n-butanol	0.75
Water saturated n-butanol + 2% p-toluenesulfonic acid	0.80
Water saturated n-butanol + 2% conc. ammonia	0.70
Butanol saturated buffer pH 6.0	0.0
Ammonium chloride (20% W/V in water)	0.0
n-butanol:methanol:water 40:10:20 containing 0.75 g methyl orange	0.90
n-butanol:methanol:water 40:10:30	0.90
water:acetone 1:1	0.35
water saturated ethyl acetate	0.0–0.31
Thin layer chromatography on silica gel plates HF/UV_{254}. Visualization of the fluorescent spot under the ultraviolet light.	
chloroform:methanol 85:15	0.51

4,280,002

MICROBIOLOGICAL GROWTH CONTAINER

Dale O. Bailey, and Paul G. Honl, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

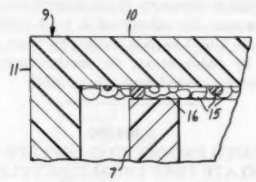
Filed Dec. 3, 1979, Ser. No. 99,319

Int. Cl.³ C12M *1/22*

U.S. Cl. 435—298 **4 Claims**

1. A microbiological growth container adapted to contain a culture medium in which to cultivate one or more different microorganisms, said container comprising a base having a bottom wall and upstanding side walls, a cover having a top wall of a configuration to mate with the base and depending side walls with the inside dimension of the depending walls exceeding the outside dimension of the side walls of the base to afford a loose fit, and a monolayer of a microsphere pressure-sensitive adhesive on the inner surface of the cover adjacent the depending edge walls and exposed to and opposed to the

upper surface of the side walls of the base for affording a releasable bond between the upper surface of the side walls and



the cover and a permeable seal to restrict evaporation from the culture medium but affording gaseous transfer.

4,280,003

PROCESS FOR THE PREPARATION OF HIGH DENSITY ANION EXCHANGE RESINS BY BROMINATION OF CROSSLINKED VINYLTOLUENE COPOLYMERS

Jean E. E. Herbin, and Paul D. A. Grammont, both of Chauny, France, assignors to Diamond Shamrock Corporation, Dallas, Tex.

Filed Jun. 15, 1979, Ser. No. 48,794

Claims priority, application France, Jun. 27, 1978, 78 19146

Int. Cl.³ C08F *8/22;* B01D *15/04;* C22B *3/08;* B01J *1/08*

U.S. Cl. 521—31 **4 Claims**

1. A process for the preparation of anion exchange resins having high capacity and a density greater than about 1.34 grams per milliliter by bromination of particles of crosslinked vinylaromatic copolymers, characterized in that vinyltoluene crosslinked with about 0.5 to about 8 percent divinylbenzene is swollen in a chlorinated hydrocarbon solvent, then is dibrominated by the addition of bromine or a bromine-releasing agent in the amount of two bromine equivalents per aromatic ring of copolymer in the presence of a catalyst to attach one bromine atom on the aromatic ring and one bromine atom on the associated lateral chain, and then is aminated.

4,280,004

MIXTURES OF AZODICARBONAMIDE AND E-AMIDOSULPHONES AND THEIR PRODUCTION AND USE AS A BLOWING AGENT

Werner Jeblick, Leverkusen; Ernst Roos, Odenthal; Theo Kempermann, and Manfred Abele, both of Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

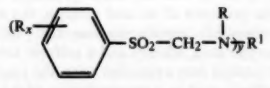
Division of Ser. No. 132,861, Mar. 24, 1980. This application Sep. 22, 1980, Ser. No. 189,736

Claims priority, application Fed. Rep. of Germany, Mar. 28, 1979, 2912290

Int. Cl.³ C08J *9/10*

U.S. Cl. 521—89 **3 Claims**

1. In the process of producing a foamed article from a rubber with the aid of a blowing agent, the improvement wherein said blowing agent is a mixture of azodicarbonamide and an α-amidosulphone of the formula



wherein each R is hydrogen, C_1–C_4 alkyl or halogen; x is from 0 to 5; y is from 1 to 3 and corresponds to the valency of R^1; R^1 is an aromatic carboxylic acid radical; a sulphonic acid radical having 6 carbon atoms; said sulphonic acid radical substituted at least once with halogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, nitro or cyano; an aliphatic carboxylic acid radical having 1 to 4 carbon atoms; a sulphonic acid radical having 1 to 4 carbon atoms; a carbonic acid radical; a thiocarbonic acid radical or a phosphoric radical which, corresponding to the numerical value of y, contains 0–2 phenoxy radicals of C_1–C_4 alkoxy radicals or said phenoxy or alkoxy radical substituted with C_1–C_4 alkyl or halogen; R^2 is the same as R^1 or hydrogen; C_1–C_4 alkyl; C_5–C_7 cycloalkyl; phenyl; phenyl substituted at least once by C_1–C_4 alkyl or halogen; phenyl alkyl having 1 to 3 carbon atoms in the alkyl moiety; said phenyl alkyl substituted at least once by C_1–C_4 alkyl or R^1 or R^2 together with the nitrogen atom to which they are attached form a lactam ring which has 4 to 6 carbon atoms, said mixture containing 99.7–70% by weight of azodicarbonamide and 0.3–30% by weight of said α-amidosulfone.

4,280,005

FOAMABLE POLYESTER COMPOSITION

Daniel W. Fox, Pittsfield, Mass., assignor to General Electric Company, Pittsfield, Mass.

Continuation of Ser. No. 903,192, May 5, 1978, abandoned, which is a continuation of Ser. No. 486,211, Jul. 5, 1974, abandoned. This application Sep. 24, 1979, Ser. No. 78,380

Int. Cl.³ C08J *9/10*

U.S. Cl. 521—90 **9 Claims**

1. A foamable thermoplastic injection moldable composition consisting of an admixture of:

(a) a polyester resin selected from the group consisting of (1) a poly(ethylene terephthalate) resin or a copolyester thereof, (2) a combination of a poly(ethylene terephthalate) resin and a poly(1,4-butylene terephthalate) resin or copolyesters thereof and (3) a combination of a poly(1,4-butylene terephthalate) resin or a copolyester thereof and a linear aliphatic polyester resin;

(b) a filler selected from the group consisting of fibrous glass or a mineral or mixtures thereof in an amount of from about 5 to about 50 weight percent;

(c) a flame retardant additive in minor proportion but in an amount at least sufficient to render the polyester non-burning or selfextinguishing; and

(d) a foaming agent selected from the group consisting of dinitrosopentamethylene tetramine, p-toluene sulfonyl semicarbozide, 5-phenyltetrazole, calcium oxalete and trihydrazine-s-triazene in an amount from 0.2 to 2.0 weight percent; said weight percent being based on the total weight of the resin.

4,280,006

PROCESS FOR THE PRODUCTION OF POLYISOCYANATE SILICATE PLASTICS UTILIZING AN ALKALI METAL CELLULOSE SILICATE CONDENSATION PRODUCT

David H. Blount, 5450 Lea St., San Diego, Calif. 92105

Division of Ser. No. 169,973, Jul. 18, 1980, Pat. No. 4,262,108, which is a continuation of Ser. No. 29,202, Apr. 12, 1979, Pat. No. 4,220,757. This application Oct. 30, 1980, Ser. No. 202,192

Int. Cl.³ C08B *31/00*

U.S. Cl. 521—154 **21 Claims**

1. A cellular polyisocyanate organic silicate plastic, having high strength, elasticity, flame resistance and dimentional stability with increase in temperature, is prepared by the process which comprises substantially simultaneously mixing and reacting an organic polyisocyanate or polyisothiocyanate, an alkali metal cellulose silicate polymer selected from the group consisting of sodium cellulose silicate polymer and potassium cellulose silicate polymer, an organic additive selected from the group consisting of monoalcohols, monothioalcohols, monophenols, and monothiophenols, said organic additive having a molecular weight of up to about 400, and a curing agent selected from the group consisting of an activator, water, water containing polyols, and water containing an alkali metal silicate, said polyisocyanate silicate plastic being the cellular solid product.

4,280,007

PROCESS FOR THE PRODUCTION OF CELLULAR POLYURETHANE ELASTOMERS

Ernst Meisert, Leverkusen; Franz-Josef Bohne, Burscheid; Klaus Brecht, Kuerten; Werner Mormann, Leverkusen; Wolfgang Krohn, Cologne, and Gerhard Henes, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 8, 1980, Ser. No. 147,905

Claims priority, application Fed. Rep. of Germany, May 21, 1979, 2920502

Int. Cl.³ C08G *18/14*

U.S. Cl. 521—159 **11 Claims**

1. A process for the production of a cellular polyurethane elastomer having a density of 300 to 800 kg/m³, comprising:

(a) preparing a prepolymer having an isocyanate content of 10 to 25% by weight from aromatic polyisocyanates and a portion of one or more polyhydroxyl compounds having a molecular weight of from 400 to 6,000; and

(b) reacting said prepolymer with the remainder of said polyhydroxyl compound and water;

wherein the quantity of said water is 0.3 to 1% by weight and the equivalent ratio of isocyanate groups to isocyanate reactive compounds is in the range of 0.95:1 to 1.1:1, characterized in that from 0.1 to 0.8% by weight, based on the whole reaction mixture, of aromatic diprimary diamines having a molecular weight from 108 to 500 are also used in (a) or (b).

4,280,008

CHIRALLY SUBSTITUTED 2-IMIDAZOLIN-5-ONES

Ulrich Schoellkopf, Bovenden; Hans-Heinrich Hausberg, Goettingen; Walter Boell, Dannstadt-Schauernheim; Hans-Joachim May, Neustadt, and Horst Koenig, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

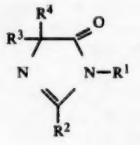
Filed Dec. 16, 1977, Ser. No. 861,731

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1976, 2658941; Dec. 24, 1976, 2658942

Int. Cl.² C07D *233/32*

U.S. Cl. 548—301 **4 Claims**

1. A 2-imidazolin-5-one of the formula I



where

R^1 is L-α-phenylethyl, (+)-3-pinyl-methyl, (−)-nopinyl or L-α-carbo-tert.-butoxyethyl,

R^2 is hydrogen, alkyl of 1 to 4 carbon atoms, benzyl or phenyl,

R^3 and R^4 are different, and

R^3 is alkyl of 1 to 4 carbon atoms;

alkyl of 1 to 4 carbon atoms substituted by alkoxy of 1 to 4 carbon atoms, by alkylthio of 1 to 4 carbon atoms, by dialkylamino, each alkyl of which contains 1 to 4 carbon atoms, by benzyloxy, by benzylthio, by acyloxy where the acyl radical contains 1 to 4 carbon atoms, by cyano, by carbalkoxy where the alkyl contains 1 to 4 carbon atoms, by benzoyl, by bromo-benzoyl, by benzyl or by phenyl;

benzyl, benzyl which is mono- or di-substituted by alkoxy of 1 to 4 carbon atoms, by acyloxy where the acyl radical contains from 1 to 4 carbon atoms, by benzyloxy, by methylenedioxy, or by alkyl of 1 to 4 carbon atoms; or

phenyl;

R^4 is alkyl of 1 to 6 carbon atoms;

alkyl of 1 to 6 carbon atoms substituted by alkoxy of 1 to 4 carbon atoms, by alkylthio of 1 to 4 carbon atoms, by benzyloxy, by cyano, by carbalkoxy where the alkyl contains from 1 to 4 carbon atoms, by benzoyl, or by benzoyl substituted by halogen;

benzyl;

benzyl which is mono- or di-substituted by alkyl of 1 to 4 carbon atoms, by alkoxy of 1 to 4 carbon atoms, by acyloxy of 1 to 4 carbon atoms, by nitro, by chloro, by bromo, by haloacetoxy, by methoxyacetoxy, by benzyloxy, or by methylenedioxy; or allyl.

4,280,009

CONTINUOUS PRODUCTION OF 2-ETHYL-HEXYL ACRYLATE FREE FROM DIOCTYLETHER

Heinz Erpenbach; Klaus Guhrmann, and Herbert Joest, all c/o Hoechst Aktiengesellschaft, Werk Knapsack, Knapsack bei Cologne, Fed. Rep. of Germany

Continuation of Ser. No. 797,812, Oct. 26, 1976, abandoned. This application Aug. 14, 1979, Ser. No. 66,510

Claims priority, application Fed. Rep. of Germany, Oct. 30, 1975, 2548561

Int. Cl.² C07C *9/54*

U.S. Cl. 560—205 **3 Claims**

1. An improved process for the continuous production of 2-ethyl-hexlacrylate free from dioctylether by reacting acrylic acid and 2-ethyl-hexanol-(1) in a molar ratio of 1:1 to 1:2 at temperatures of 85° to 140° C. in the presence of an acid catalyst the improvement which is: continuously introducing essentially only acrylic acid, 2-ethyl-hexanol-(1) and a sulfuric acid catalyst into a reaction zone; distilling off the resulting reaction water azeotropically together with the 2-ethyl-hexanol-(1) near the head of a first distilling zone being mounted on the reaction zone; condensing the azeotrope and separating it into an alcoholic phase and an aqueous phase; recycling the alcoholic phase to the head of the first distilling zone and removing the aqueous phase; conveying reaction mixture maintained for a period of 2 to 8 hours in the reaction zone from the reaction zone to a second distilling zone; distilling off overhead 2-ethyl-hexanol-(1) in excess together with traces of unreacted acrylic acid and recycling the distillate to the reaction zone; delivering base product obtained in the second distilling zone to a third distilling zone; distilling overhead pure 2-ethyl-hexylacrylate and removing a high-boiling residue from the base of the third distilling zone.

4,280,010

CONTINUOUS PRODUCTION OF ALKYL ACRYLATES FREE FROM ETHER

Heinz Erpenbach, Sürth bei Köln; Klaus Gehrmann, Erftstadt Lechenich; Hans-Klaus Kübbeler, Swisttal, and Winfried Lork, Erftstadt Friesheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 744,172, Nov. 22, 1976, abandoned. This application Aug. 14, 1979, Ser. No. 66,511

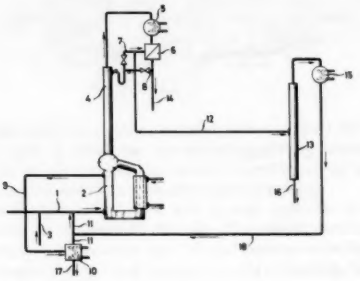
Claims priority, application Fed. Rep. of Germany, Nov. 26, 1975, 2552987

Int. Cl.² C07C *69/54*

U.S. Cl. 560—205 **11 Claims**

1. An improved process for the continuous production of alkyl acrylates free from ether by reacting acrylic acid with a C_1–C_4-alkanol, in a molar ratio of 1:1 to 1:2, in liquid phase, at temperatures of 80° to 130° C., under pressures of 100 to 760 mm Hg, in the presence of an acid catalyst, the improvement which is: continuously introducing essentially only a reaction mixture of acrylic acid, alkanol and a sulfuric acid or organic sulfonic acid catalyst into a reaction zone, the reaction mixture containing sulfuric acid in a concentration of 0.1 to 3 weight %, or the organic sulfonic acid in a concentration of 1 to 8 weight %, reacting the reaction mixture over a period of 4 to 10 hours in the reaction zone, distilling off, near the head of a first distilling zone mounted on the reaction zone, an azeotropic mixture of alkyl acrylate, reaction water and unreacted alkanol; condensing the mixture, and separating the mixture into an aqueous phase and organic phase; recycling a portion of

the organic phase to the head of the first distilling column, and removing the remaining aqueous phase; delivering the balance portion of the organic phase to a second distilling zone, distilling off overhead an azeotropic mixture of alkanol and ester, condensing the mixture, recycling it to the reaction zone, and removing ether-free alkyl acrylate through the base portion of



the second distilling zone; continuously taking a portion of reaction mixture from the reaction zone, distillatively freeing said reaction mixture from high-boiling matter, admixing the resulting distillate with a quantity of catalyst equivalent to that removed together with said high-boiling matter, and then recycling the distillate to the reaction zone.

4,280,011

ALDEHYDE GENERATORS AND FOODSTUFFS CONTAINING SUCH GENERATORS

Robert S. DeSimone, Middletown, N.Y., assignor to Hercules Incorporated, Wilmington, Del.

Continuation-in-part of Ser. No. 761,183, Jan. 21, 1977, abandoned. This application Apr. 5, 1978, Ser. No. 893,907

Int. Cl.[3] **C07C** *41/50, 41/54*

U.S. Cl. 568—603 **1 Claim**

1. 1,2,3,4,5,6-hexa[(1'-ethoxy)ethoxy]hexane.

4,280,012

METHOD OF REMOVING CHLORINATED PHENOL IMPURITIES

Albino Pastura, Herdecke; Gerhard Kelbch, Witten, and Hans-Leo Hülsmann, Wetter, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Mar. 1, 1979, Ser. No. 16,477

Claims priority, application Fed. Rep. of Germany, Mar. 9, 1978, 2810142; Apr. 1, 1978, 2814126

Int. Cl.[3] **C07C** *37/70, 39/26*

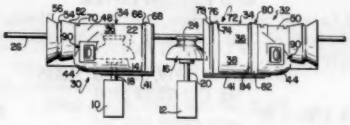
U.S. Cl. 568—755 **24 Claims**

1. A method of removing an impurity of the group chlorinated dibenzo-p-dioxins, chlorinated dibenzofurans, chlorinated hydroxydiphenylethers and chlorinated diphenylethers from a halogenated phenol composition containing said impurity which comprises contacting at 20° to 200° C. under a pressure of normal up to 15 atmospheres said composition containing halogenated phenol with 0.5 to 5 weight percent of an agent which is hydrazine, acetylene, or a compound which under the processing conditions is a source of hydrazine or acetylene.

4,280,013
INSULATOR COVER

Melvin E. Clutter, Centralia, Mo., assignor to A. B. Chance Company, Centralia, Mo.

Filed Jun. 16, 1980, Ser. No. 159,490
Int. Cl.[3] H02G *1/02*; H01B *17/00*
U.S. Cl. 174—5 R **5 Claims**



1. A removable two-piece insulative cover adapted for installation over at least one conductor-supporting insulator through use of an elongated manipulative tool by an installer remote from the insulator, said covering comprising:

elongated, open-ended, first and second separable cover sections each integrally formed of yieldable insulative synthetic resin material, each of said sections including

an elongated upper wall segment having depending, laterally spaced parts;

a pair of elongated inwardly extending, generally opposed bottom wall portions respectively extending from said spaced parts,

said wall segment and bottom wall portions cooperatively defining an elongated, insulator-receiving space which extends along the length of said section from one end thereof,

the innermost adjacent edges of said bottom wall portions being spaced apart a distance less than the maximum width of said insulator-receiving space for presenting only a restricted opening for receiving a base of an insulator;

structure adjacent the end of said section remote from said one end for connection of the section to an additional, longitudinally aligned conductor cover; and

means on said section for removable connection of a manipulative tool;

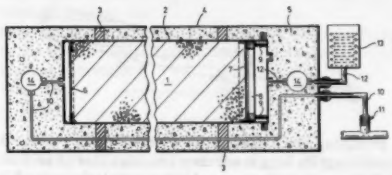
said one end of said first section being telescoped into said one end of the second section for presenting an interfitted cover.

4,280,014
ELECTRIC CABLE INSTALLATIONS

Michael S. Papadopulos, Higham, England, assignor to BICC Limited, London, England

Filed Feb. 14, 1980, Ser. No. 121,468
Claims priority, application United Kingdom, Feb. 27, 1979, 06825/79
Int. Cl.[3] B01D *35/02*
U.S. Cl. 174—14 R **3 Claims**

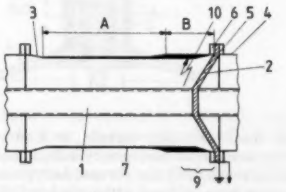
1. An oil-filled electric power cable installation comprising a plurality of oil-filled cable lengths electrically connected in series and hydraulically sectionalized by a plurality of stop joints, each said cable length having an impregnating oil maintained under pressure by oil tanks connected to said stop joints and incorporating an oil-purifying unit located between the oil tank and the stop joint of at least one such connection, said oil-purifying unit comprising a column or bed of an active purifying agent wherein said active purifying agent is in the form of compact granules having diameters in the range of 1 to 5 mm, where by the interstitial space between the granules is such that the maximum pressure drop across said purifying unit in service is not greater than $20kN/m^2$, flow being reversible through said oil-purifying unit.



4,280,015
HIGH-TENSION LINE

Franz Czech, Niederhasli, and George-Heinz Krieter, Würenlos, both of Switzerland, assignors to BBC Brown, Boveri & Company Limited, Baden, Switzerland

Filed Apr. 24, 1979, Ser. No. 32,754
Claims priority, application Switzerland, May 24, 1978, 5630/78
Int. Cl.[3] H01B *9/04*
U.S. Cl. 174—28 **12 Claims**



1. An electric line, especially a high-tension line, comprising:

a metallic casing which includes an arc-endangered portion of the casing;

a conductor arranged within said metallic casing;

a first electrically insulative covering extending around and outside said arc-endangered portion of the metallic casing, which covering includes a heat and pressure resistant insulative tape material wound about said portion of the metallic casing.

4,280,016
FIRE RESISTANT ELECTRIC CABLE

Sigmund Ege, Oslo, Norway, assignor to International Standard Electric Corporation, New York, N.Y.

Continuation of Ser. No. 898,823, Apr. 21, 1978, abandoned. This application Aug. 20, 1979, Ser. No. 68,096
Int. Cl.[3] H01B *7/24*
U.S. Cl. 174—102 R **5 Claims**

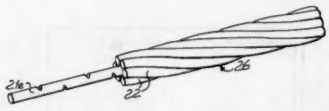
1. A fire damage resistant, electric cable comprising:

a layer of wires stranded about the perimeter of a central

circle forming an interior longitudinally extending space having a center axis;

a layer of electrical insulating material surrounding said layer of wires and a jacket of conductive material over said insulating material;

a solid, straight center wire placed within said longitudinally



extending space, said center wire having an average diameter over its length which is less than that of said central circle, said center wire having regularly spaced weak spots such that when said center wire is subjected to compressive forces, small distributed deformations will take place at each of said weak spots so that no large kink will occur in said center wire.

4,280,017

MULTIPLE-DIELECTRIC INSULATOR

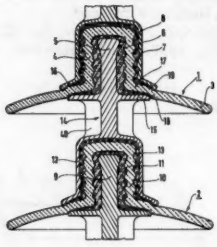
Michel Willem, Abrest, France, assignor to Societe Anonyme dite: Ceraver, Paris, France

Filed Dec. 6, 1979, Ser. No. 101,007

Claims priority, application France, Dec. 21, 1978, 78 35918

Int. Cl.³ H01B *17/02, 17/08*

U.S. Cl. 174—182 **1 Claim**



1. An insulator which includes at least one plate-shaped dielectric component having a cylindrical head, a connecting member having at least one pin end, each pin end being embedded inside a recess defined within the head of a corresponding one of the dielectric components, and another connecting member having at least one cap end, each cap end covering the head of a corresponding one of the dielectric components and being sealed thereon, each connecting member having a pin end also having a flange spaced from the embedded pin end, the flange having an outside diameter larger than the outside diameter of the head of the dielectric component in which said pin end is embedded, and each cap has a flared base which covers an annular portion of the plate-shaped part of the dielectric component which extends beyond the outside diameter of the head, so as to define a rigid extension on either side of the dielectric component, wherein the improvement comprises:

said dielectric component is made of tempered glass, and the plate-shaped part of the dielectric component has an annular step which forms a raised circular boss on the head end side of the plate-shaped part and a circular depression on the other side of the plate-shaped part, the outer perimeter of said boss being covered by the flared base of the cap end, and the flange of the pin end contiguously abutting the outer perimeter of said depression, whereby in the event that the dielectric component is shattered, substantially all of the pieces forming the head and that portion of the plate-shaped part within the annular step will be trapped between the flanged pin end of the one connecting member and the flared cap end of the other connecting member to maintain resistance of the insulator to bending.

4,280,018

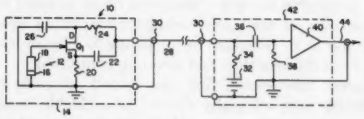
INTEGRATED PIEZOELECTRIC SOUND TRANSDUCER AND PREAMPLIFIER

Arnold Lazarus, San Francisco, and Stuart L. Weiss, Boulder Creek, both of Calif., assignors to Strobotronix, Inc., San Francisco, Calif.

Filed May 14, 1979, Ser. No. 38,555

Int. Cl.³ G10H *5/00*

U.S. Cl. 179—1 M **5 Claims**



1. An integrated piezoelectric sound transducer and preamplifier within a single enclosure adapted to be affixed to a resonant cavity of a musical instrument comprising a field-effect transistor having a source, a drain and a gate, said transistor being connected with a source resistor connected in a source-follower configuration, with said sound transducer connected in series between said gate and the outer conductor of a coaxial cable to both provide DC bias for said gate and provide audio signals produced by said transducer to said gate, said drain being connected to the outer conductor of said coaxial cable through a capacitor and to an inner conductor of said coaxial cable through an impedance device for receiving DC power over said inner conductor, said source being coupled to the inner conductor of said coaxial cable by a capacitor and to the outer conductor of said coaxial cable by said source resistor.

4,280,019

COMBINATION ACOUSTIC CONDITIONER AND LIGHT FIXTURE

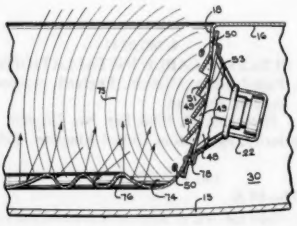
Robert L. Propst, Ann Arbor; Travis M. Randolph, and Theodore M. Reyda, both of Saugatuck, all of Mich., assignors to Herman Miller, Inc., Zeeland, Mich.

Division of Ser. No. 857,894, Dec. 6, 1977, Pat. No. 4,214,298.

This application Nov. 23, 1979, Ser. No. 96,769

Int. Cl.³ H04M *1/19;* **H04K** *1/00;* **H05K** *5/00*

U.S. Cl. 179—1.5 M **4 Claims**



1. Sound generating apparatus adaptable for use in a room enclosure having a ceiling comprising a support, a bowl shape reflecting element mounted on said support, circuit means providing an electrical signal and converting said signal into an audible sound signal, modulation means for cyclically varying frequencies of said sound signal and a speaker mounted on said support and positioned adjacent said reflecting element so that sound waves emanating from said speaker are directed toward

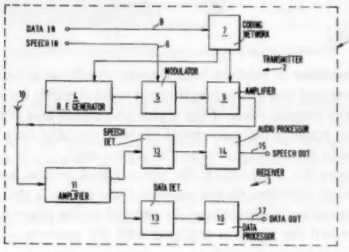
said element, said reflecting element having incurvate surfaces provided with non-uniform undulations so that sound waves contacting said undulations are dispersed in a plurality of directions and reflect from said ceiling, thus producing an indistinct, unintelligible sound for masking external sounds in the vicinity of said sound generating apparatus.

4,280,020

RADIO TELEPHONE SYSTEM WITH DIRECT DIGITAL CARRIER MODULATION FOR DATA TRANSMISSION

Lewis E. Schnurr, Harlow, England, assignor to Essex County Council, Chelmsford, England

Filed Jan. 9, 1979, Ser. No. 2,189
Int. Cl.³ H04Q *7/04*
U.S. Cl. 179—2 EA **7 Claims**



1. In an automatic telephone system in which communication is effected by transmission of signals via radio link, a method of transmitting speech signals together with supervisory signals for supervising establishment and subsequent release of a connection to a selected subscriber comprising:

generating a carrier signal;

linearly modulating said carrier signal with the speech signals to produce speech-related sideband energy;

imposing the supervisory signals on said carrier signal so that a characteristic of said carrier signal assumes a plurality of discrete states to represent the supervisory signals at a low baud rate thereby producing supervisory signal related sideband energy containing frequencies all of which are closer to the frequency of said carrier signal than are the frequencies in the speech-related sideband energy, whereby the supervisory signal-related sideband energy is entirely seperate in the frequency domain from said speech-related sideband energy; and

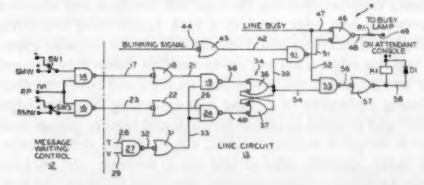
transmitting at least said sidebands via the radio link.

4,280,021

MESSAGE WAITING SYSTEM

William K. C. Yuan, LaGrange, Ill., assignor to Entel Corporation, Riverside, Ill.

Filed Jul. 23, 1979, Ser. No. 59,960
Int. Cl.³ H04M *3/42*
U.S. Cl. 179—84 C **10 Claims**



1. An improved message waiting system for use with PABX systems having attendant's console means and busy lamp field means for indicating a busy condition of any subscriber station by providing a steady signal to the lamp in the field means corresponding to the busy subscriber station,

said improved message waiting system comprising message waiting control means at said console means for operation by the attendant for initiating a message waiting condition,

a first message waiting signal source,

selecting means for selecting the busy lamp in the busy lamp field means representing the desired station that has the message waiting, and

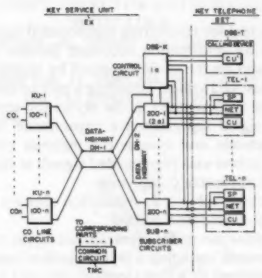
means for connecting the first message waiting signal source to the selected busy lamp to thereby indicate the message waiting condition.

4,280,022

KEY TELEPHONE SYSTEMS

Koichi Sekiguchi, Asaka; Hikaru Takematsu, Higashikurume, and Kazutada Tatsukura, Tokorozawa, all of Japan, assignors to Iwasaki Tsushinki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 25, 1979, Ser. No. 6,519
Claims priority, application Japan, Feb. 7, 1978, 53-11893; Feb. 7, 1978, 53-11894; Feb. 7, 1978, 53-11895; Feb. 7, 1978, 53-11896
Int. Cl.³ H04Q *5/20*
U.S. Cl. 179—99 A **20 Claims**



7. A key telephone system adapted to selectively connect a plurality of key telephone sets to a plurality of CO lines or intercomm. lines through a key service unit and pluralities of talking lines and control lines; wherein the key service unit is provided with a first pulse generator for generating clock pulses, a plurality of high-speed time slot pulse trains respectively corresponding to the CO lines or intercomm. lines and a plurality of control signal transmitting low-speed time slot pulse trains respectively corresponding to the plurality of control lines, a plurality of memories such as circulating memories provided respectively corresponding to the plurality of key telephone sets, a plurality of write means each provided corresponding to one of the key telephone sets for writing a control output transmitted via a corresponding one of the control lines from the corresponding key telephone set in a corresponding one of the plurality of memories in synchronism with the plurality of control signal transmitting low-speed time slot pulse trains, a switching element provided corresponding to one of the CO lines or intercomm. lines and one of the key telephone sets and having a holding function controlled by an AND output of the output signal from a corresponding one of the memories and a corresponding one of the plurality of high-speed time slot pulse trains respectively to the CO lines or intercomm. lines and switching means for controlling the switching element; wherein the plurality of key telephone sets are each provided with a second pulse generator for generating a synchronizing time slot pulse train substantially synchronized with a corresponding one of the plurality of control signal

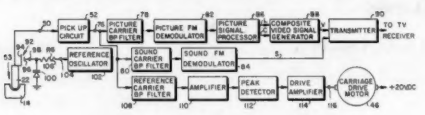
transmitting low-speed time slot pulse trains, actuating means including a plurality of CO line or intercomm. line selecting keys respectively corresponding to the CO lines or intercomm. lines and control output means for deriving the control output from the corresponding key telephone set by an AND output of the output from the actuating means and the synchronizing time slot pulse train; and wherein one of the CO lines or intercomm. lines selected by the control output sent out by the selecting operation of one of the selecting keys of one of the key telephone sets is connected to the key telephone set to enable talking.

4,280,023

STYLUS POSITION SENSING APPARATUS FOR VIDEO DISC PLAYER

Todd J. Christopher, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Jul. 9, 1979, Ser. No. 55,976
Int. Cl.³ G11B *3/38*
U.S. Cl. 369—43 **3 Claims**



1. In a system for recovering prerecorded signals from a disc record having information recorded thereon along a spiral track disposed on the surface thereof by means of a track-following stylus; said system including a pickup circuit coupled to an electrode incorporated in the stylus for sensing the variations in a signal representative capacitance formed by said pickup electrode and conductive material disposed in said record to recover said prerecorded signals at the output terminal thereof; apparatus comprising:

(a) a carriage subject to translation along a path disposed radially of said disc record;

(b) compliant means for securing said stylus to said carriage;

(d) first means including a stylus position indicative capacitance defined by a first electrode secured in fixed relation to said stylus and coupled to said pickup circuit and a second electrode mounted to said carriage adjacent to said first electrode; said first means further including means coupled to said second electrode and modulated at a given frequency rate; and

(e) second means coupled to said pickup circuit output terminal for deriving signals at said given frequency to the relative exclusion of said prerecorded signals for generating a signal indicative of the relative position of said stylus with respect to said carriage along said path.

4,280,024

SELECTIVELY DAMPED VIDEO DISC STYLUS ASSEMBLY

Anil R. Dholakia, East Windsor, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 22, 1979, Ser. No. 68,504
Int. Cl.³ G11B *3/38*
U.S. Cl. 369—219 **13 Claims**

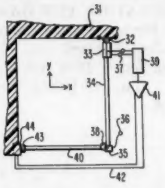
1. A signal pickup assembly for use with a record disc having an information bearing spiral groove, said assembly comprising:

a signal pickup stylus contoured for reception within the spiral groove;

a support housing having a compliant member attached thereto;

a stylus arm having a first end at which said stylus is attached and a second end attached to the compliant member for providing limited unrestrained movement of the stylus in at least two dimensions, said stylus arm being substantially parallel with the tangent to the groove at the point of stylus contact when the stylus is operatively tracking the spiral groove;

a longitudinal rigid member of relatively low density having a first end connected to the stylus arm proximate the first end of the stylus arm and having a second end, said rigid member being positioned substantially perpendicular to said stylus arm;



a member of relative high density rigidly attached near the second end of the longitudinal rigid member for increasing the inertial mass of the stylus and stylus arm combination to resist radial movement of the stylus due only to impulsive forces imparted to the stylus; and

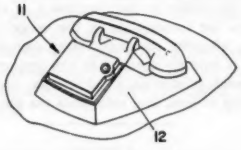
means for connecting the second end of the longitudinal rigid member to the support housing such that the rigid member is approximately parallel to the plane of the disc when the stylus is engaged with the groove.

4,280,025

LOCKABLE COVER ASSEMBLY FOR PUSH-BUTTON KEY PAD

David Carlberg, Los Altos, Calif., assignor to Engineering Systems Corp., Santa Clara, Calif.

Filed Jan. 9, 1980, Ser. No. 110,660
Int. Cl.³ H04M *1/66*
U.S. Cl. 179—189 D **7 Claims**



1. In conjunction with a telephone instrument having a faceplate opening and an internal flange therein; a lockable cover assembly comprising a faceplate received in said opening and supported by said flange, a matrix of holes in said faceplate through which the telephone push-button keypad extends, a plurality of slots extending through said faceplate and disposed adjacent to one edge thereof, a lock access hole extending through said faceplate and disposed adjacent to the edge opposite said one edge; a keypad cover member removably secured over said keypad to prevent access thereto, said cover member including a plurality of locking lugs extending from one edge thereof and adapted to extend through said slots to engage said internal flange in locking fashion, a lock device secured adjacent to the opposite edge of said cover member, said locking device including a shaft extending therefrom through said lock access hole, and latch means extending from said shaft to engage said internal flange and prevent removal of said cover member from said telephone instrument.

4,280,026

ACTUATOR MECHANISM FOR A PORTABLE, HAND-HELD TOOL

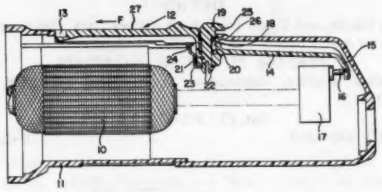
Lorenzo E. Alessio, Lecco, Italy, assignor to Black & Decker Inc., Newark, Del.

Filed Nov. 21, 1978, Ser. No. 962,591

Claims priority, application Italy, Nov. 21, 1977, 22780/77[U]; Nov. 21, 1977, 22781/77[U]

Int. Cl.³ H01H *15/00*

U.S. Cl. 200—157 **14 Claims**



1. An actuator mechanism for controlling the operation of the motor of a portable, motor-driven tool having a housing for enclosing the motor, the actuator mechanism comprising:

a switch having an actuating plunger movable between first and second positions corresponding to the off and on conditions of said switch, said actuating plunger being spring-loaded to normally maintain said switch in said off condition,

a slider engaging said plunger and slideably mounted in the wall of the housing of the tool so as to be slideable against the resilient force of said plunger between first and second locations corresponding to the off and on conditions of said switch;

a latch member mounted on the slider so as to be movable with respect thereto from a latching locked-off position wherein said latch member coacts with said housing to prevent the slider from being displaced from said first location to said second location thereby locking said switch in said off condition to an intermediate position in which said latch member permits manual displacement of said slider to said second location against the force of said spring-loaded plunger whereby said slider returns to said first location upon manual release of said slider, and to a latching locked-on position wherein said latch member coacts with said housing to maintain said slider in said second location thereby locking said switch in said on condition.

4,280,027

SWITCH BLADE MECHANISM AND MULTI-ARRANGEMENT

John Comerford, Glendale Heights, and Robert E. Zimmer, Niles, both of Ill., assignors to The Singer Company, Stamford, Conn.

Filed May 27, 1980, Ser. No. 153,445

Int. Cl.³ H01H *19/00*

U.S. Cl. 200—6 A **10 Claims**

1. A switch assembly enclosed in a housing and including a switch comprising

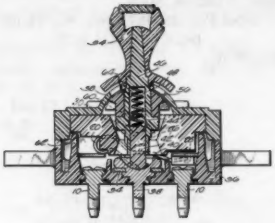
first and second terminals mounted in the housing in generally the same plane,

a resilient switch blade reversely bent to provide long and short legs,

the short leg being pivotally mounted on the first terminal and the free end of the long leg overlying and spaced from the second terminal,

a fixed support in the housing elevated with respect to said plane,

an actuator pivoted in the housing and normally engaging the long leg of the blade between the reverse bend and the centerline joining the blade pivot point and the actuator pivot point so as to normally hold the reversely bent portion of the blade against the support,



actuation of the actuator in one direction moving its point of engagement with the blade along the long leg past said centerline to cause the blade to pivot and bring the free end of the long leg into contact with said second terminal.

4,280,028

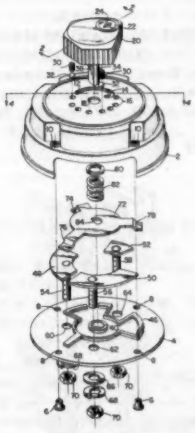
BOAT BATTERY SELECTOR SWITCH COMBINED WITH LOCK

Leroy F. Hollenbeck, Jr., Miami, Fla., assignor to Perko, Inc., Miami, Fla.

Filed Feb. 11, 1980, Ser. No. 120,230

Int. Cl.³ H01H *9/28, 19/20*

U.S. Cl. 200—44 **3 Claims**



1. A single pole, triple throw selector switch for boat batteries having:

(a) a housing for said selector switch with a hole through the top center thereof;

(b) a travelling groove describing a semi-circle about said hole on said top center of the housing;

(c) a locking position groove at one end of said travelling groove;

(d) a selector knob having a spindle inserted for rotation in said hole; and

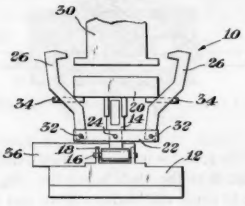
(e) a locking cylinder mounted for rotation by a key in said selector knob and having a locking pin projecting from the bottom thereof for engagement with said travelling and locking position groove.

4,280,029

ELECTRICAL SWITCH

John W. Lewis, Baton Rouge, La., assignor to The Dow Chemical Company, Midland, Mich.

Filed Feb. 26, 1979, Ser. No. 15,394
Int. Cl.³ H01H 9/20
U.S. Cl. 200—50 R **11 Claims**



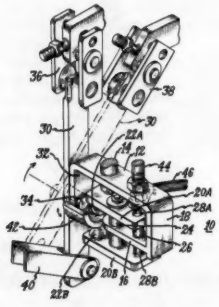
1. An electrical switch comprising:
(a) a base member;
(b) an electrical conducting contact member;
(c) a means in cooperative combination with said base member and said electrical contact member adapted to move said contact member outwardly from said base member toward an electrical bus member;
(d) a releasable clamping means in cooperative combination with said base member and said electrical contact member; said moving means and said clamping means in combination adapted to clamp and engage the bus member and said electrical contact member together with a sufficient force to permit flow of electrical current between the bus member and said electrical contact member.

4,280,030

HIGH CURRENT MECHANISM HAVING FLEXIBLE CONTACT ARM

Gordon A. Leiter, Rome, Ga., and Herman H. Schall, Hudson, Ohio, assignors to General Electric Company

Filed Apr. 7, 1977, Ser. No. 785,500
Int. Cl.³ H01H 21/54
U.S. Cl. 200—237 **5 Claims**



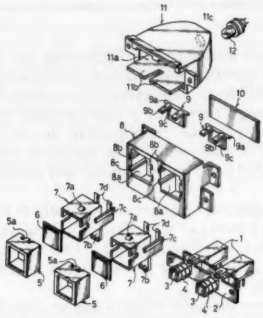
1. In a high current carrying mechanism of the type that includes at least one high current carrying, electrically conductive flexible connection between first and second points,
said second point being rotatable through less than half a revolution,
about an axis that is generally parallel to or coincident with an axis through said first point,
the improvement comprising:
that said high current carrying, electrically conductive flexible connection between said first and second points is fabricated of electrically conductive, laminated material, with individual laminae being electrically connected to adjacent laminae,
at least in the region where said laminated, electrically conductive flexible connection is attached to said first and second points; and
said laminated, electrically conductive flexible connection includes at least a portion that is of S-shape.

4,280,031

ILLUMINATING TYPE PUSH-BUTTON SWITCH DEVICE

Shiro Kondo, and Yasuo Takii, both of Furukawa, Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed Dec. 27, 1979, Ser. No. 107,525
Claims priority, application Japan, Dec. 28, 1978, 53-179707[U]
Int. Cl.³ H01H 9/16
U.S. Cl. 200—314 **8 Claims**



1. An assembly of push button switches having push members continually illuminated, including a frame carrying an array of push button switches each having an operation rod slidable therein for changing the status of the respective switch, a plurality of push members carried slidably by said frame, said push members being each engaged with a respective one of said operation rods for unitary movement therewith and having at its forward end portion a respective display window for transmitting light, a light source held rearwardly of said frame, a plurality of shutter members each held pivotally to said frame, said shutter members including a shutter plate formed by a light transmitting material and held at a location between said light source and a respective one of said display windows, a light diffusing plate extending between said light source and each said shutter member to provide a uniform amount of light to each display window of every non-depressed push member, and respective means associated with each said push member for pivoting the respective shutter member out of the path of light to the respective display window during depression of said push member to increase the amount of light thereto.

4,280,032

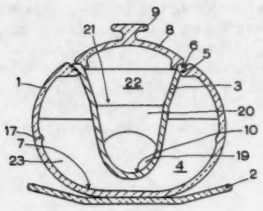
EGG COOKING IN A MICROWAVE OVEN

Melvin L. Levinson, 1 Meinzer St., Avenel, N.J. 07001

Filed Feb. 14, 1979, Ser. No. 12,050
Int. Cl.³ H05B 6/80
U.S. Cl. 219—10.55 E **9 Claims**

1. A utensil to cook an egg in a microwave oven which comprises:
a microwave-reflective, heat-conductive, open-mouthed first container with inner side walls and a floor which define a chamber and where said inner walls and floor are constructed so that, when said egg is contained in said chamber, the yoke of said egg, which is denser than the

white of said egg, will sink through said egg white by gravity until said yolk is microwave shielded from beneath by contacting said first container's floor and lower side walls and said yolk rests on said floor beneath said egg white,



a microwave-permeable second container disposed in a spaced relationship with said first container to that, at least, a portion of the heat-conductive outer surface of said first container will be in physical contact with a microwave-lossy liquid when said liquid is outside said first container and inside said second container.

4,280,033

PROCESS AND APPARATUS FOR THE THERMAL TREATMENT OF COAL

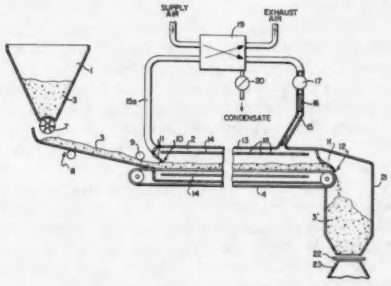
Dietrich Wagener; Horst Fach, and Hayri Ergun, all of Essen, Fed. Rep. of Germany, assignors to Didier Engineering GmbH, Essen, Fed. Rep. of Germany

Filed Mar. 22, 1979, Ser. No. 23,093

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1978, 2812521

Int. Cl.³ H05B *6/78*

U.S. Cl. 219—10.55 A **15 Claims**



1. An apparatus for the thermal treatment of coal, said apparatus comprising:

a treatment zone through which coal is passed, said treatment zone comprising a substantially enclosed chamber, and conveyor means for continuously passing ground coal through said enclosed chamber, said conveyor means comprising an endless conveyor belt having an upper run extending through said chamber; and

means associated with said treatment zone for thereat exposing said coal to microwave radiation, said exposing means comprising microwave electrodes in the form of plates positioned above and below said upper run of said endless belt conveyor.

4,280,034

VISUAL ANGLE ADJUSTABLE PORTABLE CASH REGISTER

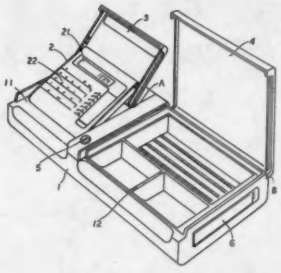
Akira Ezaki; Yoshiaki Kobayashi, and Sigeaki Hayashi, all of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 28, 1979, Ser. No. 16,076

Claims priority, application Japan, Feb. 28, 1978, 53-26785[U]; Mar. 25, 1978, 53-38564[U]

Int. Cl.³ G06C *5/02*; G07G *1/00*

U.S. Cl. 235—1 D **11 Claims**



1. A calculating machine unit, comprising:

calculating means having an outer housing; and

case means having an outer housing for retaining said calculating means therein, the outer housing of said case means being held in contact with one end of the outer housing of said calculating means at a first contacting point, said case means being a separate unit relative to said calculating means, said case means further including,

cash case means for storing currency therein, and

support means mounted to the outer housing of said case means for supporting the other end of said calculating means, said support means being held in contact with said other end of said calculating means at a second contacting point, said support means being movable to an angular position for selectively varying the angle of orientation of said calculating means relative to said case means.

4,280,035

PLURAL KEY ACTUATED TOTALIZER FOR GASOLINE SALES PUMP

Eugene F. Settlemire, Tuscon, Ariz., assignor to Austin A. Webb, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 6,534, Jan. 25, 1979, Pat. No. 4,217,485. This application Feb. 13, 1980, Ser. No. 121,099

Int. Cl.³ B67D *5/22*

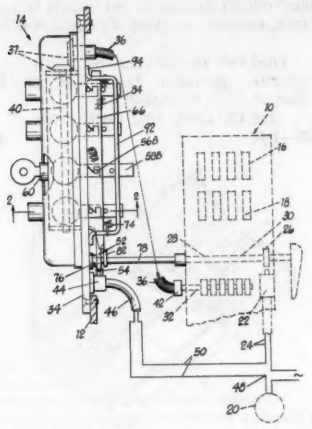
U.S. Cl. 235—94 R **7 Claims**

1. In a totalizer attachment for a gasoline sales pump having plural totalizers on axially shiftable shafts, a key operated lock for each shaft, a control slide actuated by each lock, a control detent and a release detent interlocked by said control slides, a switch arranged to be actuated by said control detent and adapted to be to the delivery circuit of the pump, a release element arranged to actuate said release detent and adapted to be connected to the reset control of the pump, a common drive shaft to which said shiftable shafts are selectively engagable, a connecting element adapted to be drivingly connected between said common shaft and the non-resettable accumulator of said pump, and a mounting plate for said attachment, the improvement which comprises:

means connecting the bodies of said locks to said plate in spaced relation to the ends of said shiftable shafts,

lugs connected to the cylinders of said locks and projecting from the bodies of the locks toward said shiftable shafts,

and cam portions on said lugs movable therewith in camming engagement across the ends of said shiftable shafts to



move the shafts into driven engagement with said common shaft.

4,280,036

BANKING APPARATUS USING PASSBOOKS

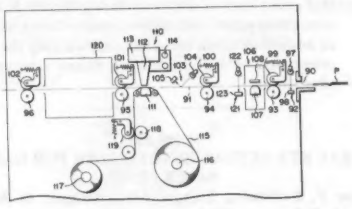
Kunio Fukatsu, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

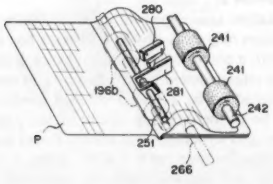
Filed Oct. 23, 1979, Ser. No. 87,649

Claims priority, application Japan, Oct. 24, 1978, 53-130053; Oct. 24, 1978, 53-130055; Oct. 24, 1978, 53-145314[U]; Apr. 11, 1979, 54-43033

Int. Cl.[3] **G06F** *15/30;* **B41J** *3/28*

U.S. Cl. 235—379 **21 Claims**





1. A passbook printing apparatus, comprising:

a passbook inlet;

a substantally straight passbook path with a fixed length and having one end connected to said inlet, said path defining a printing position for a passbook;

passbook conveying means capable of being driven so as to feed the passbook in one direction from said inlet along said passbook path and to return said passbook to said inlet in the opposite direction;

printing means including a common platen, said platen being disposed in the printing position in said passbook path;

a journal paper having a part always placed on said platen; and

feed means for feeding said journal paper on said platen.

14. A banking apparatus using passbooks, comprising;

an inlet through which a passbook is inserted;

a passbook path with one end connected to said inlet;

a driving mechanism carrying the passbook along said path; and

a passbook page turning mechanism disposed in said passbook path.

4,280,037

APPARATUS FOR CASHLESS PAYMENT OF MERCHANDISE OR SERVICES

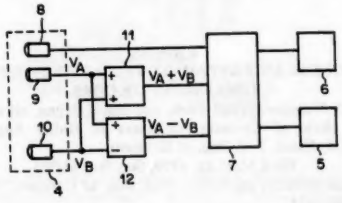
Rolf Schmidhauser, Cham, Switzerland, assignor to LGZ Landis & Gyr Zug AG, Switzerland

Filed Jan. 17, 1980, Ser. No. 112,903

Claims priority, application Switzerland, Jan. 31, 1979, 928/79

Int. Cl.[3] **G06K** *7/10, 13/00, 19/06*

U.S. Cl. 235—454 **6 Claims**



1. The combination of an apparatus for the transfer of fungible goods or services, for example, cashless payment for merchandise or services with

transfer means having marked thereon a plurality of cancellable value units in the form of at least first and second types of optical markings different from one another, said markings being arranged in a predetermined cyclical sequence on at least one track of said transfer means, so as to preclude the occurrence of any gap between adjacent markings, each individual marking modifying light impinging thereon in a characteristic manner, a transition region being formed between said adjacent markings, said apparatus comprising:

reading means, including a light source, and at least first and second light sensors associated with said first and second types of optical markings, respectively, said reading means being arranged for reading and generating signals from said markings, and from said transition regions,

activatable erasing means for erasing said markings in dependence of the number of value units to be cancelled,

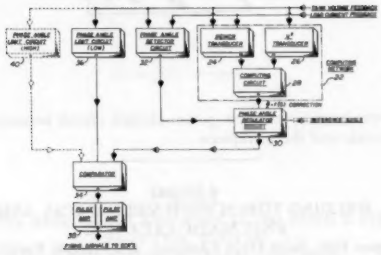
transport means for effecting a relative movement between said transfer means, and respectively, said reading means and said erasing means, along said track, said reading means and said erasing means being movable near to said transition regions, and

control means for controlling the movement of said transport means, and of said erasing means, for evaluating the signals from said reading means, and for disabling said transport means and activating said erasing means upon said erasing means being near one of said transition regions; so as to erase said one transition region.

4,280,038
METHOD AND APPARATUS FOR INDUCTING HEATING AND MELTING FURNACES TO OBTAIN CONSTANT POWER

George Havas, Youngstown, and Fred D. Esenwein, Columbiana, both of Ohio, assignors to Ajax Magnethermic Corporation, Warren, Ohio

Filed Oct. 24, 1978, Ser. No. 954,312
Int. Cl.[3] H05B 6/06; H02M 5/45
U.S. Cl. 219—10.77 8 Claims

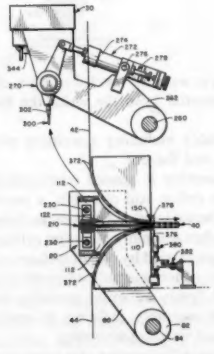


1. Power control means for induction heating or melting furnace of varying load conductance, a parallel resonant circuit DC/AC inverter supplying AC power to said furnace, means for holding the said AC power constant by adjustment of the power factor angle to the parallel resonant circuit load as a function of the varying load conductance of the said load while maintaining the direct current to the inverter constant, and limit means to restrict the power factor angle to a predetermined minimum value.

4,280,039
APPARATUS FOR FABRICATING AND WELDING CORE REINFORCED PANEL

James R. Campbell, South Laguna, and Roy L. Anspach, Anaheim, both of Calif., assignors to Thomas P. Mahoney, Balboa Island; Donald A. Ruston; Robert S. Barnes, both of Newport Beach; Edward K. Nance, Jr.; The Nance Childrens's Trust, both of Fullerton; Gloria I. Ruston, Laguna Niguel; Jeane O'Connor, Fullerton; Terri Lynn Ruston; Donald Alan Ruston, both of Laguna Niguel; Donald M. Cislo and George E. Schick, both of Marina Del Ray, all of, Calif., part interest to each

Filed Jan. 12, 1979, Ser. No. 2,761
Int. Cl.[3] B23K 11/10, 37/02
U.S. Cl. 219—78.11 23 Claims

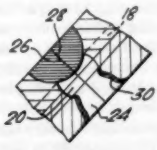


1. In a welding apparatus for welding metallic face sheets to metallic core strips located in a cavity between said face sheets, said core strips having securement portions thereupon for weldment to contiguous and opposed inner surfaces of said face sheets, the combination of: welding head means movable into and out of said cavity; welding electrode means on said welding head means, said welding electrode means including spaced banks of individually energizable and movable electrodes engageable with said securement portions of a core strip to carry said core strip into said cavity when said welding head means is moved into said cavity; means for moving said spaced banks of welding electrodes away from one another to urge said securement portions of said core strip into engagement with the inner surfaces of said face sheets; a source of welding potential; and welding potential controlling means for impressing said welding potential sequentially across said individually energizable electrodes of each bank to weld said securement portions of said core strips to the inner surfaces of said face sheets.

4,280,040
METHOD OF ARC WELDING POROUS SHEET METAL

John J. Gilkison, Nelson, England, assignor to Rolls-Royce Limited, London, England

Filed Mar. 22, 1979, Ser. No. 22,838
Claims priority, application United Kingdom, May 20, 1978, 20952/78
Int. Cl.[3] B23K 9/02
U.S. Cl. 219—104 4 Claims



1. A method of butt welding together two edges of a porous sheet metal material having holes therein opening to each surface thereof by an electric arc welding process including the steps of:

positioning the two edges to be welded in abutting relationship to form a butt joint running along the two edges, the butt joint having inside and outside surfaces;

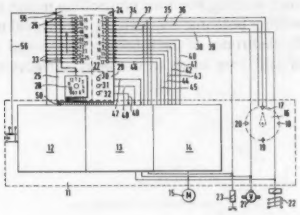
first welding, from one of the inside or outside surfaces, along the butt joint with an electric arc welding apparatus having a welding electrode using an amperage and a speed of relative movement between the material and the welding electrode causing the metal material to melt to a depth of not more than half of the material thickness with the holes opening to each surface, in the line of the weld, remaining open after welding; and

second welding, from the other of the inside or outside surfaces, along the butt joint with the electric arc welding apparatus using an amperage and a speed of relative movement between the material and the welding electrode causing the metal material to melt to a depth of not more than half the material thickness with the holes opening to each surface, in the line of the weld, remaining open after welding.

4,280,041
APPARATUS FOR ARC WELDING OR PLASMA CUTTING

Werner Kiessling, Eching, and Wolfgang Lookhof, Stein-Laboe, both of Fed. Rep. of Germany, assignors to Messer Griesheim, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 7, 1978, Ser. No. 940,371
Claims priority, application Fed. Rep. of Germany, Sep. 15, 1977, 2741469
Int. Cl.³ B23K *9/10, 9/00*
U.S. Cl. 219—121 PT **4 Claims**



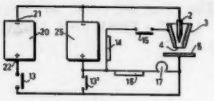
1. In an apparatus for arc welding or plasma cutting wherein the apparatus includes welding/cutting equipment having a current source in a current source housing as well as a set of controls to influence the welding/cutting process, the improvement being a diagnosis apparatus selectively operatively hooked up to at least one of said current source and said controls, said diagnosis apparatus containing indicating means for indicating signals transmitted from said controls and/or the current source units to be controlled, said diagnosis apparatus further containing switching circuits for simulating the operation of said controls and/or the current source units to be controlled, said diagnosis apparatus further having circuits for monitoring the live voltages and flowing currents for said controls and the units to be controlled of said current source, said current source housing having a front face with an openable door for exposing a slide-in unit, said slide-in unit being slidable partially out of said housing and having an exposed upper surface upon being partially pulled out, said diagnosis apparatus being constructed as a plug-in module having connectors, said slide-in unit having complementary connectors exposed on its upper surface whereby said slide-in unit may be selectively operatively connected to said plug-in module, and said slide-in unit connectors being shielded within said housing upon disconnection of said plug-in module and upon closure of said housing front face.

4,280,042
PROCESS AND INSTALLATION FOR AUTOMATIC IGNITION OF A PLASMA CUTTING TORCH

Jean-Yves Berger, Bessancourt; Michel Kostelitz, Versailles; Bernard Reynaud, L'Isle Adam, and Raymond Egee, Champagne-sur-Oise, all of France, assignors to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude and La Soudure Autogene Francaise, both of Paris, France

Filed Jan. 22, 1980, Ser. No. 114,200
Claims priority, application France, Feb. 1, 1979, 79 02610
Int. Cl.³ B23K *9/10*
U.S. Cl. 219—121 PT **10 Claims**

1. In a method for the automatic ignition of a plasma cutting torch having an electrode and a tube for producing a plasma, of the kind in which said torch is arranged for forward and reverse feed with respect to a workpiece and the approach of said torch towards the workpiece is carried out until the appearance of an electric signal for measurement of the correct cutting gap between said torch and the workpiece which causes the stopping of the torch, the invention which comprises supplying said electric signal in response to the sensed

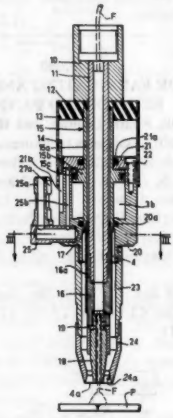


current intensity of a low-power electric circuit between said electrode and the workpiece.

4,280,043
WELDING TORCH WITH MECHANICAL AND PNEUMATIC CLEANING

Jacques Feix, Saint Ouen l'Aumone, and Frederic Cardot, Andresy, both of France, assignors to L'Air Liquide, Scoiete Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France

Filed Jan. 15, 1979, Ser. No. 3,910
Claims priority, application France, Feb. 8, 1978, 78 03458
Int. Cl.³ B23K *9/16, 9/26*
U.S. Cl. 219—137.31 **13 Claims**



1. An electric welding torch having a chamber exposed to particles of material from the weld, the torch comprising, in combination:

a first assembly including a welding electrode protruding from one end thereof;

a second assembly in spaced relationship with the first assembly to define said chamber, a portion of said second assembly being located adjacent said one end and forming with said first assembly an outlet orifice for said chamber;

scraper means carried by one of said assemblies in position to engage the other assembly adjacent said outlet orifice for detaching firmly adhering particles from said chamber, said other assembly defining an enclosed cylinder disposed about said one assembly;

operating means for moving said scraper means into engagement with said other assembly to thereby detach said firmly adhering particles, said operating means including a piston enclosed in said other assembly and slidably dis-

posed in said cylinder for controlling the movement of said scraper means; and

means for directing a cleaning fluid through the entire volume of said chamber at a pressure sufficient to detach lightly adhering particles therefrom and sweep both the lightly adhering particles and the firmly adhering particles detached by the scraper means through said outlet orifice, the cleaning fluid being directed through said chamber subsequent to the formation of said weld.

4,280,044

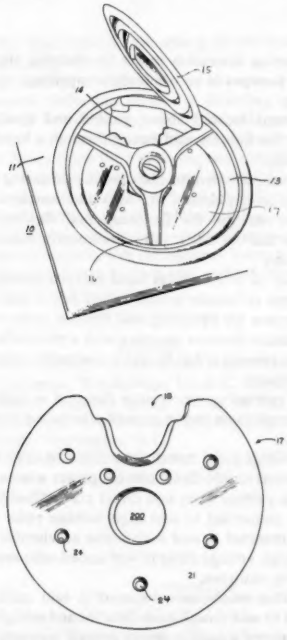
HEAT ABSORBING AND RADIATING DEVICE FOR ELECTRIC STOVES

Peter Princevalle, 5 E. Quail St., Sparks, Nev. 89431

Continuation-in-part of Ser. No. 857,120, Dec. 5, 1977, abandoned. This application Sep. 28, 1979, Ser. No. 80,045

Int. Cl.³ H05B *3/68*

U.S. Cl. 219—462 **13 Claims**



1. A heat absorbing and radiating device wherein said device comprises a ceramic disc having a flat top surface, a convex bottom surface, a central vertical hole therein, said hole being shaped sized to maintain said device positioned above a reflector pan and below a burner element of an electric range, and a plurality of spaced-apart cone shaped throughbores for inhibiting cracking of said disc, said disc having a cutout portion of irregular shape and spaced from said hole said cut out portion extending radially inward from the periphery of said disc said disc having a refractive glaze thereon.

4,280,045

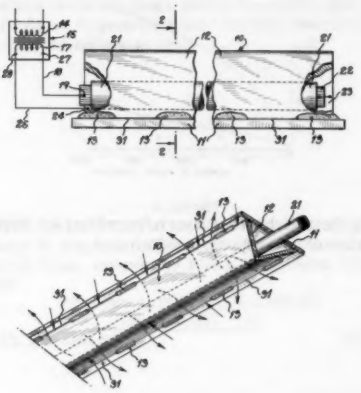
SKIN EFFECT HEAT GENERATING UNIT HAVING CONVECTIVE AND CONDUCTIVE TRANSFER OF HEAT

Douglas Blackmore, 57 Hillcrest Dr., Upper Saddle River, N.J. 07458

Continuation-in-part of Ser. No. 794,437, May 6, 1977, abandoned. This application Jan. 4, 1979, Ser. No. 1,044

Int. Cl.³ H05B *3/00;* **F16L** *53/00*

U.S. Cl. 219—540 **9 Claims**



1. A heat generating system having a heat generator structure utilizing skin effect alternating current and including a ferromagnetic, elongate hollow element and an insulated conductor freely movable for expansion within said hollow element, the inner surfaces of said element defining an air space at least partially surrounding said conductor, said conductor being connected at one end to one pole of a source of alternating current, the other end of said conductor being connected to a far end of said hollow element, and a near end of the hollow element being connected to another pole of the alternating current source, said hollow element comprising two parts with one part defining an open face channel having two elongated, coextensive, spaced longitudinal edges, the other part covering the open face of the channel defined by said one part, means for securing said other part in spaced relationship to said longitudinal edges so as to provide openings between the surface of said other part and said longitudinal edges of said one part along the length of said hollow element enabling substantial transverse air flow freely therethrough across said conductor and internal surfaces of said hollow element with resultant convection heating air-flow of said generated heat, and said two parts being of such thickness that the alternating current is confined along the inner surface portion of said hollow element when said conductor and hollow element are energized by said source.

4,280,046

SHEATH HEATER

Kazumi Shimotori, Kawasaki; Isao Izumi, Yokohama, and Hideki Murabayashi, Kawasaki, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Nov. 30, 1979, Ser. No. 98,717

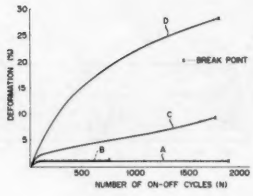
Claims priority, application Japan, Dec. 1, 1978, 53-148914

Int. Cl.³ H05B *3/44*

U.S. Cl. 219—544 **5 Claims**

1. A metal sheath heater having a coiled heating wire embedded in a ceramic insulator, enclosed in said sheath, such that the thermal deformation of the heating wire is is substantially prevented by the insulator, characterized in that the heating wire is formed of a nichrome-based wire having an

Al-rich surface layer which is converted into alumina by thermal oxidation and alloyed with the nichrome-based wire



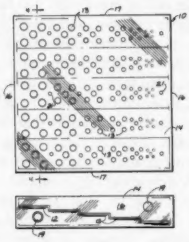
wherein the Al-rich surface layer is formed by a hot dipping on the surface of the nichrome-based wire.

4,280,047

NUCLEAR IMAGING PHANTOM

Gary Enos, 12 Clintonville Rd., Northford, Conn. 06472

Filed Jun. 11, 1979, Ser. No. 47,366
Int. Cl.³ G01D *18/00*
U.S. Cl. 250—252 **11 Claims**



1. A phantom for evaluation of nuclear imaging systems, comprising:

a closed container of radiolucent material;

a liquid filling said container, said liquid serving as a scattering medium;

a plurality of parallel steps made of radiolucent material and fixed within the container, the steps presenting individual planar surfaces progressively spaced from a first wall of the container and arranged side-by-side within the liquid in a direction that is perpendicular to their respective lengths;

and a plurality of identical groupings of discrete geometrical attenuation objects arranged along the respective planar surfaces of said steps

said objects having a common thickness between oppositely facing parallel surfaces arranged in planes parallel to the planar surfaces of the respective steps;

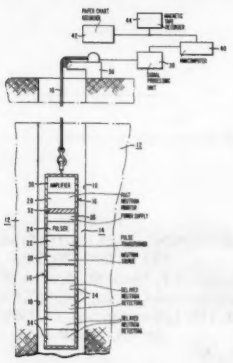
each grouping comprising a plurality of objects having a progression of object size and spacing between adjacent objects.

4,280,048

NEUTRON ACTIVATION PROBE

Richard C. Smith, Pittsburgh, Pa., assignor to Wyoming Mineral Corporation, Lakewood, Colo.

Continuation of Ser. No. 873,343, Jan. 30, 1978. This application Jun. 7, 1979, Ser. No. 46,734
Int. Cl.³ G01V *5/00*; G21G *4/02*
U.S. Cl. 250—264 **1 Claim**



1. A neutron activation probe for assaying the amount of fissionable isotopes in an ore body comprising:

a casing;

drive means located above ground and attached to said casing for moving said casing through a borehole in said ore body;

a sealed-tube accelerator disposed in said casing and capable of producing pulses of 14.3 MeV neutrons by a deuterium-tritium reaction for fissioning said fissionable isotopes within said ore body and consequently emitting delayed neutrons;

a plurality of helium-3 gas filled delayed neutron detectors arranged colinearly in said casing below said sealed-tube accelerator for detecting said delayed neutrons;

a scintillation detector together with a phototube for detecting the amount of fast neutrons emitted by said sealed-tube accelerator;

a direct current power source disposed in said casing and connected to an above ground alternating current power supply;

a high voltage pulse transformer disposed in said casing and connected to said direct current power source for increasing the voltage from said direct current power source;

a pulser connected to said high voltage pulse transformer and connected to said sealed-tube accelerator for providing a high voltage pulse to said sealed-tube accelerator for emitting neutrons;

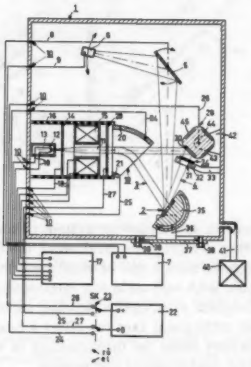
an amplifier mechanism disposed in said casing and connected to said scintillation detector and said phototube for transmitting signals to above ground instrumentation; and

control means for controlling the pulsing of said sealed-tube accelerator, for registering the signals from said delayed neutron detectors between pulses of said sealed-tube accelerator and for delaying the signal of each of said delayed neutron detectors by an amount sufficient to correspond each of said signals with the same ore zone of said ore body and for adding each of said signals so delayed and recording the result of such addition thereby increasing the accuracy of the reading of said delayed neutrons resulting from each ore zone.

4,280,049
X-RAY SPECTROMETER

Helmut W. W. Werner; Antonius W. Witmer, and Wilhelmus F. Knippenberg, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 24, 1979, Ser. No. 42,269
Claims priority, application Netherlands, Jun. 12, 1978, 7806330
Int. Cl.³ G01M *23/00*
U.S. Cl. 250—310 7 Claims

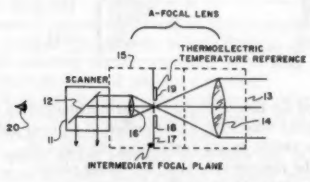


1. An X-ray spectrometer comprising an evacuated housing, a wavelength dependent X-ray detection system, electron means for generating an electron beam to irradiate a specimen to be examined, deflection means for directing said electron beam, an X-ray source having an anticathode on which said electron beam may be directed by said deflection means to generate an X-ray beam for irradiating said specimen, wherein said electron beam is directed to said anticathode when said deflection means is switched off, and wherein said electron beam is directly incident on said specimen when said deflection means is switched on, and means arranged between said anticathode and said specimen in the incident X-ray beam path for filtering reflected electrons from said anticathode and passing only said X-rays to said specimen.

4,280,050
INFRARED VIEWER AND SPECTRAL RADIOMETER

Robert E. Callender, Woodbridge; Loren C. Doyle, Alexandria, and William J. Lightel, Springfield, all of Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 17, 1980, Ser. No. 130,957
Int. Cl.³ H01J *31/49*
U.S. Cl. 250—330 10 Claims



1. A combined infrared viewer means for producing a visible image of one or more distant objects using only the infrared radiation therefrom and spectral radiometer comprising:

an objective lens means to project a primary image of said distant infrared emitting objects on a primary image plane;

at least one electrically controlled reference temperature strip mounted in said primary focal plane adjacent said primary image;

a second lens means interconnected with said first lens means to refocus said primary image and the emission from said strip on a secondary image plane as a combined secondary image;

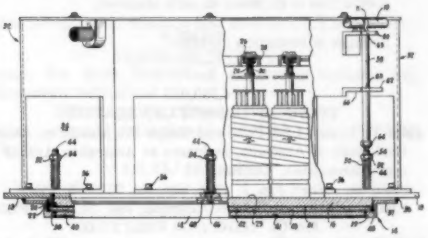
an infrared image detector in said image plane centered on and equally responsive to all portions of said secondary image; and

a variable center-frequency narrow-bandwidth optical filter of infrared frequencies located between said second lens means and said image detector.

4,280,051
SCINTILLATION CRYSTAL MOUNTING APPARATUS

Lawrence W. Engdahl, Guilford, and Allan J. Deans, Hamden, both of Conn., assignors to Picker Corporation, Cleveland, Ohio

Filed Oct. 4, 1978, Ser. No. 948,341
Int. Cl.³ G01T *1/20*
U.S. Cl. 250—363 S 14 Claims



1. In a gamma imaging device, an improved detector head comprising:

(a) a housing

(b) a detector assembly removably mounted within said housing, said assembly comprising:

(i) a crystal sub-assembly including an output window, generally light transparent, and an input window, generally opaque to light but transparent to gamma radiation;

(ii) a plurality of spaced phototubes for receiving light energy emitted from said crystal sub-assembly;

(iii) an optical member for transmitting light energy from said crystal sub-assembly to said phototubes, said member having an input and an output surface;

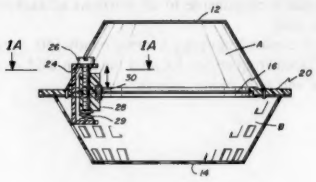
(iv) optical member mounting means for rigidly mounting said optical member to said detector assembly, said mounting means preventing relative movement between said optical member and said detector assembly;

(v) a first biasing means urging said phototubes into abutting engagement with the output surface of said rigidly mounted optical member;

(vi) a resilient second biasing means urging said crystal sub-assembly into abutting engagement with the input surface of said optical member;

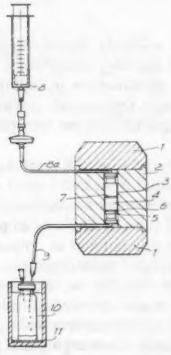
(vii) optical coupling means in the interface between the phototubes and the output surface of the optical member and between the output window of the crystal sub-assembly and the input surface of the optical member.

4,280,052
MULTIPLE CHAMBER IONIZATION DETECTOR
Elias E. Solomon, 20 Christina Ct., Duxbury, Mass. 02332
Filed Nov. 9, 1978, Ser. No. 959,102
Int. Cl.[3] G01T 1/18
U.S. Cl. 250—381 14 Claims



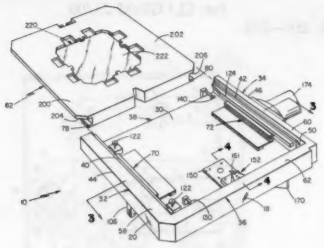
1. An ionization detector comprising;
means defining at least first and second chambers,
electrode means associted with the chambers including a common conductive wall means defining a common electrode between chambers and defining at least a side of each chamber,
a radioactive source common to both chambers and having portions thereof disposed in each chamber,
means providing adjustable positioning between the source and common electrode to alter the proportion of the source that is disposed in each chamber,
and means coupled from said common electrode for sensing changes in ionization current.

4,280,053
TECHNETIUM-99M GENERATORS
John V. Evans, Lilli Pilli, and Ralph W. Matthews, Georges Hall, both of Australia, assignors to Australian Atomic Energy Commission, Australia
Filed Jun. 2, 1978, Ser. No. 912,146
Claims priority, application Australia, Jun. 10, 1977, PD0412
Int. Cl.[3] G21G 1/04; C01G 57/00
U.S. Cl. 250—432 PD 7 Claims



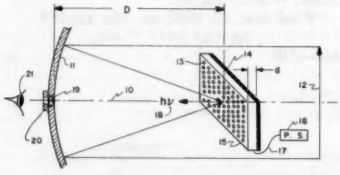
1. A generator for technetium-99 m comprising a container including a matrix in which technetium-99 m is produced, the matrix comprising a polymolybdate compound other than a heteropolymolybdate compound, said polymolybdate compound being of molybdenum containing molybdenum-99, being of gel-like structure and being substantially non-elutable in an eluant which may be used in a radiopharmaceutical, the matrix permitting diffusion of technetium-99 m therethrough and elution therefrom by said eluant.

4,280,054
X-Y WORK TABLE
Nicholas Guarino, Arlington, Mass., assignor to Varian Associates, Inc., Palo Alto, Calif.
Filed Apr. 30, 1979, Ser. No. 34,505
Int. Cl.[3] H01J 37/26
U.S. Cl. 250—440 3 Claims



1. A precision interferometer system including a work table for supporting a workpiece, said work table being moveable along orthogonal axes, a pair of orthogonal mirrors attached to and moveable with said table and intersecting respective ones of said orthogonal axes, optical sensing means mounted along each of said orthogonal axes to reflect a beam from said mirrors and thereby sense the displacement of said system along each axis, the improvement comprising
said work table comprises a solid block of metal having two orthogonal external surfaces of said block polished to constitute said mirrors, said block also having an interior Faraday cup support surface;
a precalibrated Faraday cup assembly mounted on said interior Faraday cup support surface of said block so that the sensing grid of said Faraday cup has a fixed relationship to the surface of a workpiece supported on said work table; and
means for securing said workpiece to move with said block.

4,280,055
MICROWAVE IMAGE CONVERTER
Reinhold Gerharz, Bethesda, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Feb. 8, 1980, Ser. No. 120,011
Int. Cl.[3] H05B 33/00
U.S. Cl. 250—484 10 Claims



1. A method for converting an image transmitted by microwaves of a given wavelength and pulsed at a given pulse frequency into a visible image comprising the steps of:
focussing the microwaves at a first image plane;
placing an array of electroluminescent detectors spaced apart at least a half of said given wavelength in said first image plane to cause emission of photons therefrom;
focussing said photons into a photon image much smaller than said microwave image at a second image plane that does not lie in the path of said microwaves; and
generating a final image containing a much larger number of

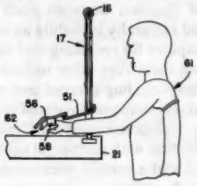
visible photons in direct proportion to the photons at each point in said photon image.

4,280,056

PROTECTIVE SHIELD FOR ARTHROGRAMS

Governor K. Renshaw, 14448 Merced St., San Leandro, Calif. 94579

Filed Oct. 30, 1979, Ser. No. 89,511
Int. Cl.³ G21C *11/00*; G21F *3/02*
U.S. Cl. 250—515 **6 Claims**



1. An X-ray shield for protecting an operator physically gripping a patient upon an X-ray table during irradation and adapted for removable attachment to a diagnostic table comprising:

a frame having vertical legs depending from a horizontal cross piece;

a pair of feet connected one to the bottom of each said legs in angularly adjustable relation thereto and being adapted for slidable engagement with at least one of two tracks extending along the top of said table for mounting said frame in adjustable position on said table in extension above the table;

an upper sheet of flexible radiation resistance material depending from said crosspiece between said legs with a lead glass window therein, and removably attached to said legs for protecting said operator standing on the opposite side of said shield from the table from stray X-rays and secondary radiation; a lower sheet of flexible radiation resistant material having attachment means along the top thereof adapted to cooperate with attachment means along the bottom of said upper sheet for removably engaging said sheets in overlapping relation whereby said lower sheet is free to move about the top thereof for extension over said table to protect the hands of said operator thereat.

4,280,057

A SURVEYING INSTRUMENT HAVING MEANS FOR TRANSMITTING SIGNALS BETWEEN AN ALIDADE AND A FIXED MEMBER

Akio Takahama, Kawasaki, and Tatsuro Hatano, Yokohama, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

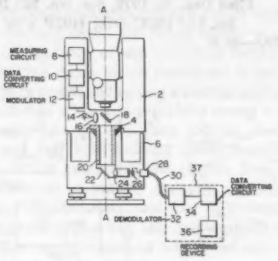
Filed Oct. 30, 1978, Ser. No. 955,779
Claims priority, application Japan, Oct. 29, 1977, 52-129246
Int. Cl.³ G02B *27/02*
U.S. Cl. 250—551 **7 Claims**

1. A survey instrument having an alidade portion and a fixed portion rotatably holding the alidade portion, comprising:

a light-emitting portion provided in at least one of said alidade portion and said fixed portion;

a light-receiving portion provided in the other of said alidade portion and said fixed portion so as to make a pair with said light-emitting portion;

first optical means provided in at least one of said alidade portion and said fixed portion together with said light-emitting portion, the first optical means collimating substantially the light beam from said light-emitting portion and directing the collimating beam to said other of said alidade portion and said fixed portion so that the collimated beam may be substantially parallel to the axis of rotation of said alidade portion; and second optical means provided in said other of said alidade portion and said fixed portion together with said light-receiving portion, the second optical means being so formed that a certain amount of the light beam from said first optical means may be always incident on the second optical means notwithstanding rotation of said alidade portion, the second optical means condensing the light beam from said first optical means on said light-receiving element;



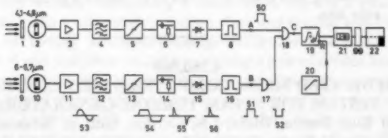
said alidade portion has an optical plummet scope; said fixed portion has a through-opening for said optical plummet scope; and the light path between said light-emitting portion and said light-receiving portion is partly used for the optical path of said optical plummet scope.

4,280,058

FLAME DETECTOR

Domokos Tar, Stäfa, Switzerland, assignor to Cerberus AG, Mannedorf, Switzerland

Filed Apr. 19, 1979, Ser. No. 31,431
Claims priority, application Switzerland, Apr. 25, 1978, 44678/78
Int. Cl.³ H01L *9/00*
U.S. Cl. 250—554 **16 Claims**



1. A flame detector of the type having a first circuit for sensing at least the flame-resonant radiation having a wavelength of 4.4 μm which is characteristic of carbon dioxide and in response thereto generating a first electrical signal for activating an alarm means, the first circuit comprising a photoelectric means for producing a first circuit signal and a band-pass filter which passes the first circuit signal only at the flicker frequency range of the flame,

a second circuit for sensing the presence of spurious radiation of the same flicker frequency range as that sensed by the first circuit, said second circuit sensing only radiation having a wavelength substantially greater than the characteristic wavelength of resonant radiation of carbon dioxide at 4.4 μm, comprising second photoelectric means generating a second electrical signal, and further comprising a second band-pass filter having the same pass-band as the band-pass filter of the first circuit and

connecting means interconnecting said first and second circuits and comprising comparator means for comparing said first and said second electrical signals and blocking activation of said alarm means by said first electrical signal whenever the radiation sensed by said second circuit

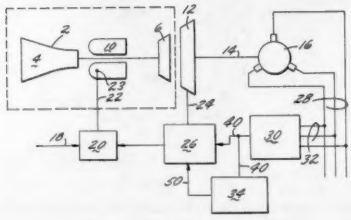
corresponds in frequency and is synchronous to the radiation sensed by that first circuit.

4,280,059

DETECTING POWER LOSS IN FREE TURBINES

Herbert C. Zickwolf, Jr., Bozrah, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 26, 1979, Ser. No. 107,294
Int. Cl.³ F02C *1/00*; H02P *9/04*
U.S. Cl. 290—40 B **5 Claims**



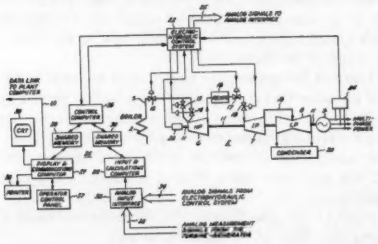
1. A control for a turbine engine including:
a gas generator comprising a compressor in the turbine and a burner for heating the air from the compressor before it reaches the turbine;
a free turbine driven by hot gas from the gas generator; and
a power output device driven by the free turbine, said control including;
a fuel control valve for the flow of fuel to the burner,
a control means for moving said valve at least in part as a function of free turbine speed;
a power sensor for determining the load on the power output device and providing a signal as a function of the load,
a load loss detector for sensing a power loss in the power output device and providing a signal as a function of the load loss including a time lag device; and
means for comparing the signals from the power sensor and the detector to determine the rate of power loss and for actuating said control means at or above a predetermined rate loss.

4,280,060

DEDICATED MICROCOMPUTER-BASED CONTROL SYSTEM FOR STEAM TURBINE-GENERATORS

Jens Kure-Jensen; Richard S. Gordon, both of Schenectady; Charles L. Devlin, Ballston Lake, and Frederick C. Krings, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 9, 1980, Ser. No. 157,348
Int. Cl.³ F01D *17/02*
U.S. Cl. 290—40 R **22 Claims**



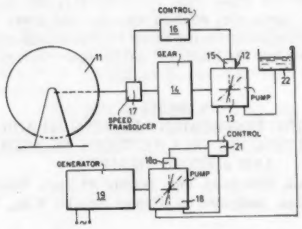
1. In combination with a turbine-generator set having a feedback control system operative in a manual mode and in a remote supervisory mode for operational control of said turbine-generator, a supervisory control system for providing direction to the feedback control system whereby the turbine-generator is controlled through all phases of operation to provide the quickest turbine-generator response without exceeding allowable levels of thermal or mechanical stress, said supervisory controller comprising:
an analog interface subsystem for receiving from said turbine-generator analog signals representing operating parameters thereof and for converting said analog signals to digital data signals;
a hierarchy of microcomputer subsystems wherein there is a distribution of function between such microcomputer subsystems, said hierarchy including an input and calculations microcomputer for receiving said digital data signals and for deriving therefrom other turbine generator operating parameters including thermal and mechanical stress values imposed on component parts of said turbine-generator, a display and communications microcomputer for inter-communication with peripheral equipment and operating personnel, and a control microcomputer for receiving information from other microcomputers of the hierarchy, for making decisions based on said information, and for providing said feedback control system with control directions; and
a plurality of shared memory units, each unit of which is shared between at least two microcomputers of the hierarchy and through which information is exchanged and shared between microcomputers of the hierarchy.

4,280,061

METHOD AND APPARATUS FOR GENERATING ELECTRICITY FROM A FIXED PITCH WIND WHEEL

Henry Lawson-Tancred, Boroughbridge, England, assignor to Sir Henry Lawson-Tancred, Sons & Co. Ltd., Yorkshire, England

Filed Oct. 25, 1978, Ser. No. 954,471
Int. Cl.³ F03D *9/00*; H02P *9/04*; F16D *31/02*; F01B *25/06*
U.S. Cl. 290—55 **13 Claims**



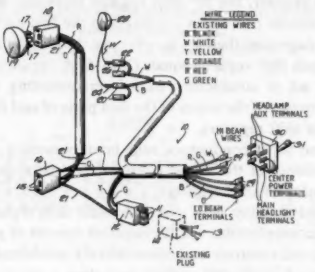
1. A method for generating electricity from wind using hydraulic pump means, variable hydraulic motor means and a wind wheel with fixed pitch hydraulically connected to a generator which comprises:
driving said generator by said wind wheel at a fixed rotational speed,
operating said wind wheel at optimum tip speed by driving said hydraulic pump means connected therewith;
controlling driving of said hydraulic pump means to effect a torque reaction on the wheel at least roughly proportional to the square of the rotational speed of the wind wheel;
supplying variable hydraulic pressure by said pump means to said motor means for driving said generator;
controlling operation of said motor means such as to maintain constant hydraulic pressure in the system while driving said generator at said fixed speed; and
obtaining a frequency synchronous with mains frequency.

4,280,062

AUXILIARY LIGHT WIRING HARNESS

Richard R. Miller, Milwaukee, and Edward A. Simi, Menomonee Falls, both of Wis., assignors to Douglas Dynamics Inc., Milwaukee, Wis.

Filed Aug. 22, 1979, Ser. No. 68,874
Int. Cl.[3] H02B 1/20
U.S. Cl. 307—10 LS 7 Claims



1. An auxiliary light wiring harness for use with a vehicle headlight system including an existing vehicle plug connected to a vehicle headlight power source, said wiring harness comprising;

first connector means adapted for connection to said existing vehicle plug for establishing an electrical connection to the vehicle headlight power source,

second connector means adapted for connection to a vehicle headlight,

third connector means adapted for connection to an auxiliary light,

conductor means connected to said first, second, and third connector means, and

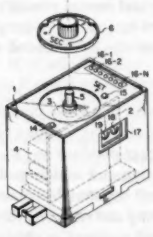
switch means connected to said conductor means and operable for selective movement between a first position wherein said conductor means electrically connects said first and second connector means so that the vehicle headlight is energized, and a second position wherein said conductor means electrically connects said first and third connector means so that the auxiliary light is energized.

4,280,063

ELECTRONIC TIMER DEVICE

Mituo Yokomori, Shizuoka, and Tsugimi Kawakami, Mishima, both of Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Sep. 25, 1979, Ser. No. 78,810
Claims priority, application Japan, Oct. 4, 1978, 53-122269
Int. Cl.[3] G04B 47/00; G04F 8/00; H01H 3/34
U.S. Cl. 307—141.4 10 Claims



1. A timer device comprising:

a power supply terminal;

a frequency variable oscillating circuit;

a counter circuit for counting an output signal from said oscillating circuit and generating a first output signal from a first output terminal thereof when the count of the counter circuit has reached a prescribed value;

switching means coupled to said first output terminal of said counter circuit and whose operation is controlled by said first output signal from said counter circuit;

a relay circuit connected between said power supply terminal and switching means and being energized responsive to a turn-on operation of said switching means; and

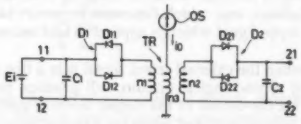
first light-emitting diode means connected in parallel with said switching means and having a current voltage characteristic such that when said switching means is turned off after energization of said relay circuit, current flow through said first light-emitting diode means maintains said relay circuit energized, said current flow, however, being insufficient to initially energize said relay circuit from a de-energized state, said first light-emitting diode means emitting light when said relay circuit is de-energized and being extinguished when said relay circuit is energized by said switching means.

4,280,064

SIGNAL ISOLATOR

Keiki Yamaguchi, and Shinichi Sano, both of Musashino, Japan, assignors to Yokogawa Electric Works, Ltd., Tokyo, Japan

Filed Sep. 1, 1978, Ser. No. 938,953
Claims priority, application Japan, Sep. 7, 1977, 52/107511
Int. Cl.[3] H03F 9/00
U.S. Cl. 307—149 9 Claims



1. An isolator comprising a transformer having a primary winding and a secondary winding, first and second non-linear circuits having nonlinear voltage-to-current characteristics, each of said nonlinear circuits including a pair of diodes having the same characteristics connected in parallel with each other with opposite polarities, means connecting said first nonlinear circuit in series with said primary winding to form an input network, means connecting said second nonlinear circuit in series with said secondary winding to form an output network, averaging means connected to said output network, and means for applying pulse signals to one of said networks, the input network and the output network being isolated from each other with respect to direct current.

4,280,065

TRI-STATE TYPE DRIVER CIRCUIT

Osamu Minato, Kokubunji; Toshiaki Masuhara, Hachioji; Toshio Sasaki, Hachioji, and Masaharu Kubo, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

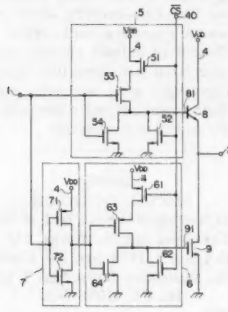
Filed Dec. 14, 1978, Ser. No. 969,269
Claims priority, application Japan, Dec. 26, 1977, 52-155570
Int. Cl.[3] H03K 3/01, 19/08
U.S. Cl. 307—473 13 Claims

1. A tri-state type driver circuit capable of providing "on" and "off" state outputs in response to the state of a driver circuit input signal applied to the driver circuit and a "float" state output which remains constant regardless of the state of said driver circuit input signal, comprising:

an output inverter circuit to provide said three state outputs, which output inverter circuit employs a bipolar transistor as a load thereof and a MOS-FET as a driver thereof,

a first logical circuit which is coupled with an input terminal of said bipolar transistor of said output inverter circuit, which first logical circuit is made up of a C-MOS circuit receiving an external select signal and a C-MOS circuit having the driver circuit input signal transmitted thereto, wherein the output of said first logical circuit can be specified by said external select signal,

a second logical circuit which is coupled with an input terminal of said MOS-FET of said output inverter circuit, which second logical circuit is made up of a C-MOS circuit receiving said external select signal and a C-MOS circuit having the driver circuit input signal transmitted thereto, wherein the output of said second logical circuit can be specified by said external select signal, and



a first C-MOS inverter which is coupled with said second logical circuit and which functions to invert said driver circuit input signal which is applied to said second logical circuit,

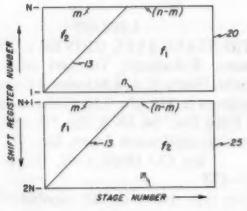
wherein when the external select signal is in a first state, the first and second logical circuits will produce output signals to set the output of the output inverter circuit to the "float" state output, and when the external select signal is in a second state, the first and second logical circuits will produce output signals to allow the output of the output inverter circuit to be in the "on" or "off" state depending upon the state of the driver input signal.

4,280,066

CHARGE TRANSFER APPARATUS

William E. Engeler, Scotia, and Jerome J. Tiemann, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 16, 1978, Ser. No. 961,260
Int. Cl.³ G11C *19/28*; H01L *29/78*
U.S. Cl. 307—221 D **1 Claim**



1. In combination,

a first plurality of N charge transfer shift registers,

said first plurality of shift registers formed in parallel on a first substrate and consecutively numbered from **1** to N, each shift register including n identical stages, each stage including a plurality of electrodes, said n identical stages of each shift register divided into a first part and a second part, the first shift register including n stages in the first part and zero stages in the second part, the number of stages included in the second parts of said shift registers between said first and said N^{th} shift register varying linearly with shift register number from said first to said N^{th} shift register with each successively numbered shift register having p stages more than the previously numbered shift register, the N^{th} shift register including m stages in the second part and n−m stages in the first part where m is p stages less than n−m, whereby the number n of stages in each shift register equals **(2N−1)** p,

a first set of conductors, each interconnecting respective electrodes of the stages of the first parts of said first plurality of shift registers,

a second set of conductors, each interconnecting respective electrodes of the stages of the second parts of said first plurality of shift registers,

a second plurality of N charge transfer shift registers,

said second plurality of shift registers formed in parallel on a second substrate and consecutively numbered from **2N** to **N+1**, each shift register including n identical stages, each stage including a plurality of electrodes, said n identical stages of each shift register divided into a first part and a second part, the $2N^{th}$ shift register including n stages in the first part and zero stages in the second part, the number of stages included in the second parts of said shift registers between said $2N^{th}$ and said $(N+1)^{th}$ shift register varying linearly with shift register number from said $2N^{th}$ to said $(N+1)^{th}$ shift register with successively numbered shift registers having p stages more than the previously numbered shift register, the $(N+1)^{th}$ shift register including m stages in the second part and n−m stages in the first part where m is p stages less than n−m, whereby the number n of stages in each shift register equals **(2N−1)** p,

each of said first set of conductors interconnecting respective electrodes of the stages of the second parts of said second plurality of shift registers,

each of said second set of conductors interconnecting respectively electrodes of the stages of the first parts of said second plurality of shift registers,

means for providing **2N** analog signals consecutively numbered from **1** to **2N**, signals **1** to **N** constituting a first plurality of analog signals and signals **2N** to **N+1** constituting a second plurality of signals,

means for inverting each of the signals of said second plurality of signals,

means for introducing a first plurality of series of packets of charge into said first plurality of shift registers, each series representing successive samples of a respective one of said first plurality of analog signals,

means for introducing a second plurality of series of packets of charge into said second plurality of shift registers, each series representing successive samples of a respective one of said inverted signals of second plurality of analog signals,

means for applying a first set of clocking voltages of a first frequency to said first set of conductors and for applying a second set of clocking voltages of a second frequency to said second set of conductors,

means for detecting and summing the outputs of said first plurality of shift registers to obtain a first sum output,

means for detecting and summing the outputs of said second plurality of shift registers to obtain a second sum output, and

means for obtaining an output representing the difference of said first sum output and said second sum output.

4,280,067
SEMICONDUCTOR CHARGE TRANSFER DEVICE HAVING A DECOUPLING GATE FOR STOPPING REVERSE CHARGE FLOW

Susumu Kohyama, Kawasaki, Japan, assignor to Tokyo Shibaura Denki Electric Co., Ltd., Kawasaki, Japan

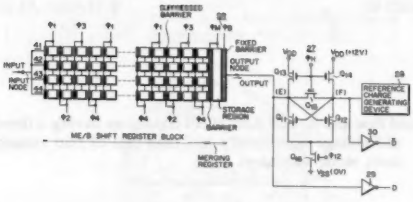
Continuation of Ser. No. 821,212, Aug. 2, 1977, abandoned. This application May 15, 1979, Ser. No. 39,123

Claims priority, application Japan, Aug. 2, 1976, 51-92206

The portion of the term of this patent subsequent to Jul. 8, 1997, has been disclaimed.

Int. Cl.[3] **G11C** *19/28;* **H01L** *29/78*

U.S. Cl. 307—221 D **2 Claims**



1. A semiconductor charge transfer device comprising:

a semiconductor charge transfer element including a plurality of transfer electrodes on an insulating layer formed on a semiconductor substrate and a detection node formed on the semiconductor substrate;

potential barrier means comprising an output electrode connected via a direct short circuit connection to a potential source of fixed value for signal charge packets provided between a final stage cell of the semiconductor charge transfer element and the detection node;

a differential detecting circuit of flip-flop type having a drive transistor for driving a load directly coupled with the detection node;

wherein said potential barrier means provided a potential barrier against a low level of the detection node when the drive transistor is conductive and said potential source of fixed value is connected to the low level side of said drive transistor;

said semiconductor charge transfer element, having a multiplex electrode per bit (ME/B) structure, comprising:

N charge transfer channels arranged in parallel whose inputs are connected to a common input means and outputs to a common output means, which includes a merging shift register of one bit storage cell including a barrier, a storage region, and a fixed barrier region, these regions being common to all said N charge transfer channels;

said charge transfer channels each including a semiconductor substrate, an insulating layer formed on said semiconductor substrate, P transfer electrodes per one channel disposed on said insulating layer, the N corresponding transfer electrodes of said N charge transfer channels being electrically connected together, and means for forming a potential barrier in part at a prescribed portion of a semiconductor region under each of a series of said P transfer electrodes of each of said charge transfer channels such that a number M of said P charge transfer electrodes, where M is less than P, remain dedicated as charge transfer electrodes, in response to application of a potential for a storage mode to the transfer electrode thereby to form a potential well in the remaining part of said semiconductor region for storing a signal charge packet, and said potential barrier being lowered in potential compared to the potential barrier being in the storage mode in response to application of a potential for the transfer mode to the transfer electrode;

means for applying N-phase non-overlapping offset clock pulse signals to said transfer electrodes of said N charge transfer channels, said clock pulse signals each being biased to low level for storage and pulsed to high level for transfer in order that a series of N transfer electrodes in each of said charge transfer channel are successively set to the transfer mode in the direction opposite to a charge transfer direction; and

means for forming a fat "0" potential barrier in part at the charge incoming side of a semiconductor region under each of transfer electrodes disposed between the input of said each charge transfer channel and the set of M transfer electrodes, when said transfer electrodes are at the storage mode, to store a fat "0" charge in the remaining part of said semiconductor region.

4,280,068
BULK CHANNEL CHARGE COUPLED DEVICE HAVING IMPROVED INPUT LINEARITY

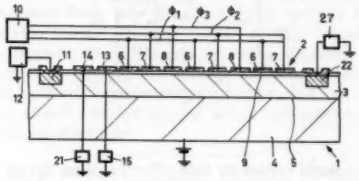
Pieter J. Snijder, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 937,311, Aug. 28, 1978, abandoned. This application May 29, 1980, Ser. No. 154,252

Claims priority, application Netherlands, Sep. 9, 1977, 7709916

Int. Cl.[3] **G11C** *19/28;* **H01L** *29/78*

U.S. Cl. 307—221 D **4 Claims**



1. A bulk channel charge coupled device, which comprises:

a semiconductor body having a semiconductor layer of at least substantially one conductivity type situated at a major surface thereof;

means for depleting the semiconductor layer over its whole thickness at least in the absence of a supply of majority charge carriers while avoiding breakdown;

a row of electrodes provided on the surface of the body above the semiconductor layer and separated therefrom by a barrier junction, said row of electrodes being connected to voltage sources for applying clock voltages during operation to cause potential wells for storing and transporting information-representing charge packets to be generated in the interior of the semiconductor layer and separated from the surface;

an input stage having a zone which forms a source of charge carriers and an input electrode which is situated between said zone and said row of electrodes and which is separated from the body by an insulating layer, a potential well being induced in the semiconductor layer during operation by means of said input electrode;

an input signal source for supplying an input signal in the form of a voltage difference between the charge carrier source and the input electrode which determines the size of a packet of charge carriers which flows from the source in the potential well below the input electrode;

means for forming said potential well in said semiconductor layer and below the input electrode during operation, the minimum of said well being situated at a smaller distance from the surface of the body than the potential wells which are induced in the semiconductor layer by means of the clock voltages applied to said electrodes, so that a substantially linear relationship between the size of said charge packet and the magnitude of the input signal is obtained; and

a sampling electrode for sampling the input signal provided

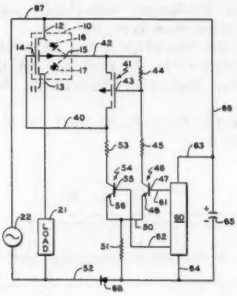
between the zone which forms the source of majority charge carriers and said input electrode, said sampling electrode having means for applying a potential in the semiconductor layer during sampling of the input signal which is at most equal to the potential in the potential well below the input electrode.

4,280,069

FIELD EFFECT TRANSISTOR DEVICE MEANS CONTROL SYSTEM

Arlon D. Kompelien, Richfield, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jul. 2, 1979, Ser. No. 53,870
Int. Cl.³ H03K *17/687*
U.S. Cl. 307—571 **14 Claims**



1. A control system for field effect transistor device means with said control system adapted to control an alternating current potential to load means, including: field effect transistor device means including drain-source channel means adapted to be connected in series circuit with said load means and said alternating current potential with said field effect transistor device means being capable of being switched between conductive and non-conductive states; said field effect transistor device means further including gate means and substrate electrode means; energy storage means including rectifier means connected to said alternating current potential to directly derive energy therefrom; condition responsive circuit means having input means connected to said energy storage means to thereby power said condition responsive circuit means; and condition responsive circuit output means including solid state switch means connected to said gate means, to said substrate electrode means, and to said drain-source channel means to control a voltage between said gate means and said drain-source channel means; said solid state switch means being controlled by said condition responsive circuit means to in turn control said voltage to operatively switch said field effect transistor device means between said conductive and said non-conductive states.

4,280,070

BALANCED INPUT BUFFER CIRCUIT FOR SEMICONDUCTOR MEMORY

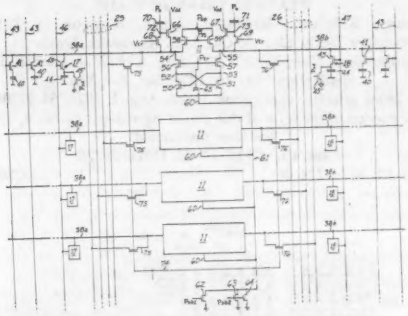
Edmund A. Reese, Sugar Land; Lionel S. White, Jr., Houston, and Joseph C. McAlexander, III, Sugar Land, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 20, 1978, Ser. No. 953,145
Int. Cl.³ H03K *3/26, 5/00*
U.S. Cl. 307—279 **10 Claims**

1. An input buffer circuit for a semiconductor memory of the type having a large number of enhancement mode transistors, comprising:

a bistable differential voltage detector having first and second field effect transistors with the gates of the transistors providing inputs to the detector,

means for coupling an input terminal to the gate of one of said transistors,



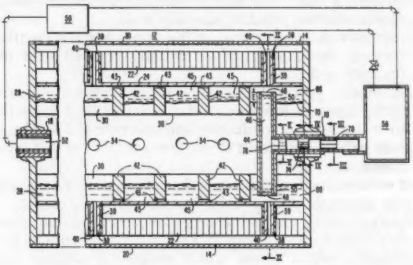
said first and second field effect transistors having a threshold voltage significantly less than that of said enhancement mode transistors.

4,280,071

VAPOR TRAP AND REGULATOR FOR SUPERCONDUCTIVE TURBOGENERATORS

Phillip W. Eckels, Penn Hills, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 30, 1979, Ser. No. 61,564
Int. Cl.³ H02K *9/00*
U.S. Cl. 310—52 **11 Claims**



1. In an internally cooled rotor having a generally cylindrical outer shell concentric with an axis of rotation, a member to be cooled, said member disposed interiorly of the shell for rotation therewith, a liquid coolant intake, rigidly attached to said rotor and concentric with said axis of rotation, a coolant outlet, and a sufficient quantity of liquid coolant introduced into the interior of the shell by the coolant intake, whereby said liquid coolant forms an annular coolant bath when the rotor is rotated at its operating speed, and forms an inner substantially concentric core space surrounded by the bath, whereby evaporated vapor collects in the core space and can be withdrawn from the space through the coolant outlet, THE IMPROVEMENT to the coolant intake comprising:

a stationary means for introducing said liquid coolant into said coolant intake;

a cylindrical axial conduit, connected to and in fluid communication with said coolant intake, said axial conduit disposed interiorly of said rotor and concentric with said axis of rotation;

a pair of radial conduits, connected to and in fluid communication with said axial conduit, said radial conduits disposed interiorly of said rotor in diametrical opposition to each other with their outermost termini in fluid communication with said coolant bath;

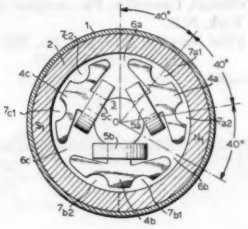
a vapor trapping means disposed interiorly of said axial conduit for trapping the coolant vapor and thereby regulating the coolant flow during transient operating conditions.

4,280,072

ROTATING ELECTRIC MACHINE

Makoto Gotou, Kadoma; Kazutsugu Kobayashi, Takatsuki, and Kenichiro Okumura, Sakai, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed May 26, 1978, Ser. No. 910,904
Claims priority, application Japan, May 26, 1977, 52/61979; Jun. 7, 1977, 52/67671; Jun. 21, 1977, 52/73971
Int. Cl.[2] H02K *21/22*
U.S. Cl. 310—67 R **19 Claims**



1. A rotating electric machine comprising a field permanent magnet member of a circular form and an armature core made of a magnetic material, said magnet member being permanently magnetized as N and S poles alternately positioned around the rotary axis of said rotating electric machine to produce field fluxes, the number of said N and S poles being P which is an even number larger than or equal to 2, and said armature core being coaxial with said magnet member and having a plurality of saliencies facing said magnet member and a plurality of polyphase winding coils which generate polyphase alternate voltages during relative rotation between said armature core and said magnet member, at least one of said saliencies having at least one indented portion in the face thereof opposed to said magnet member, and the angle between a line from the center of said indented portion to said rotary axis and a line from the center of a neighbouring indented portion or from the center of a neighboring space between two neighbouring saliencies to said rotary axis is not equal to an integral multiple of the quotient of (360/P)°.

4,280,073

ELECTROMAGNETICALLY RELEASED SPRING APPLIED FRICTION BRAKE WITH TORQUE BOOSTER

Donald L. Miller, Horseheads, N.Y., assignor to Facet Enterprises, Inc., Tulsa, Okla.

Filed Mar. 1, 1979, Ser. No. 16,586
Int. Cl.[3] H02K *7/10*
U.S. Cl. 310—77 **10 Claims**

1. A friction braking arrangement comprising:

at least one rotatable member to be braked;

a stationary ferromagnetic housing mounted adjacent to said at least one rotatable member;

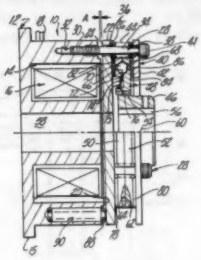
a ferromagnetic armature interposed said rotatable member and said stationary ferromagnetic housing and means mounting said armature to said housing for relative axial movement while restraining said armature against free relative rotation;

spring operator means interposed said armature and said ferromagnetic housing for generating a force acting on said armature tending to urge said armature axially away from said housing;

friction engagement means for creating a frictional breaking force on said at least one rotatable member by the urging of said armature away from said stationary housing;

electromagnetic means mounted in said ferromagnetic housing and acting when energized, for urging said armature axially towards said ferromagnetic housing with a force nullifying said spring operator force; and

torque booster means comprising non self-energizing camming means reacting to the torque reaction generated by



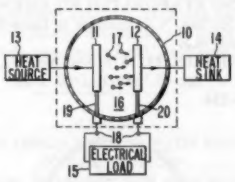
said friction engagement means to increase the axial engagement force only when said spring operator force is exerted on said armature, whereby the increased axial engagement force increases the torque capacity of said brake arrangement, said camming means comprising conical ballrecess engagement means interposed said at least one of said rotatable member and at least another of said rotatable members.

4,280,074

COLLECTOR FOR THERMIONIC ENERGY CONVERTER

Ronald L. Bell, Woodside, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Feb. 16, 1979, Ser. No. 12,687
Int. Cl.[3] H02N *3/00*
U.S. Cl. 310—306 **11 Claims**



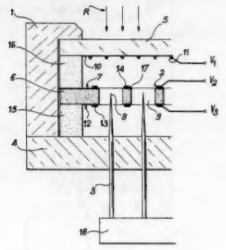
1. In a thermionic energy converter having within a sealed enclosure, an emitter for emitting electrons upon receipt of heat from a heat source, an electron transport medium, a collector for collecting electrons and adapted to communicate waste heat to a heat sink, and means for conducting electrical current between said emitter and a first terminal exterior to said enclosure, and means for conducting electrical current between said collector and a second terminal exterior to said enclosure the improvement comprising:

said collector comprising a first layer of a p-type semiconductor material formed on a second layer of an n-type semiconductor material, said first and second layers forming a p-n junction and having a forward bias therebetween, one side of said p-type layer forming the exposed surface of said collector and said n-type layer being in electrical contact with said means to conduct electrical current between said collector and said second terminal.

4,280,075
DEVICE FOR DETECTING AND LOCATING RADIATIONS, AND IN PARTICULAR ELECTRON RELEASING PHENOMEA

Georges Comby, Rambouillet, and Philippe Mangeot, Paris, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Jul. 6, 1979, Ser. No. 55,750
Claims priority, application France, Jul. 12, 1978, 78 20807
Int. Cl.[3] G01T *1/185;* H01J *47/08*
U.S. Cl. 313—93 **8 Claims**

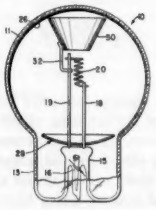


1. A device for detecting and locating radiations, comprising at least one cathode brought to a first potential with respect to a reference potential in a sealed enclosure, a plurality of thread-like anodes insulated from one another and photosensitive means, said enclosure being provided with a port-hole transparent to the radiation involved, situated in register with said cathode and anodes, said device further comprising an insulating support with two faces, a portion of one of said two faces, situated in register with said port-hole, being coated with a layer of a conductive material forming a mesh network constituting said cathode, the extremities of said anodes being in the shape of a point and the axes of said anodes respectively coinciding with the axes of the meshes of said network, these points being recessed with respect to the insulating support face, coated with the network of conductive meshes.

4,280,076
INCANDESCENT LAMP WITH STRUCTURE FOR COLLECTING EVAPORATED FILAMENT MATERIAL

Peter Walsh, Stirling, N.J., assignor to Duro-Test Corporation, North Bergen, N.J.

Filed Oct. 18, 1978, Ser. No. 952,268
Int. Cl.[3] H01K *1/00, 1/26*
U.S. Cl. 313—114 **23 Claims**



1. An incandescent electric lamp comprising:

an envelope,

incandescent filament means located within said envelope, said filament means emitting light in all directions therefrom upon incandescence, material from the filament means being vaporized therefrom which moves by diffusion toward the envelope,

means for supplying voltage to the filament means to cause the filament means to incandesce,

and means having a continuous and smooth light reflective surface located adjacent a portion of said filament means intermediate the filament means and the wall of the envelope in the diffusion path of the vaporized filament material for collecting material vaporized from the filament means, said collecting means shaped with respect to the portion of the filament means to which it is adjacent so that a substantial portion of the light emitted by said filament means toward said collecting means misses said collecting means and is transmitted to the envelope in the original direction of emission or grazes said collecting means at a small angle of incidence to be reflected to travel toward the envelope.

4,280,077
CATHODE-RAY TUBE HAVING CORRUGATED SHADOW MASK WITH VARYING WAVEFORM

Sigmund T. Villanyi, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Filed May 11, 1978, Ser. No. 904,778
Int. Cl.[3] H01J *29/07*
U.S. Cl. 313—402 **9 Claims**

1. In an apertured shadow mask type cathode-ray tube, comprising an evacuated envelope including a faceplate, a phosphor viewing screen located on an inner surface of said faceplate, a multiapertured shadow mask mounted adjacent to said screen, and means for generating and projecting electrons along a plurality of convergent paths through said mask and to said screen, the improvement comprising,

a shadow mask including a corrugated cross-section having a varying waveform wherein the cross-sectional contour of said mask at the edge of said mask is different than the cross-sectional contour at the center of said mask.

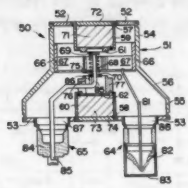
4,280,078
MAGNETRON

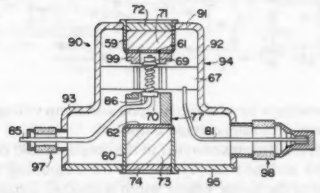
Kenziro Tsutsui, Otsu, and Masamitsu Kakei, Hikone, both of Japan, assignors to New Nippon Electric Co. Ltd., Osaka, Japan

PCT No. PCT/JP78/00033, § 371 Date Jul. 30, 1979, § 102(e) Date Jul. 23, 1979, PCT Pub. No. WO79/00329, PCT Pub. Date Jun. 14, 1979
This PCT application filed Jul. 23, 1979, Ser. No. 103,949
Claims priority, application Japan, Nov. 30, 1977, 52-144425
Int. Cl.[3] H01J *25/50*
U.S. Cl. 315—39.51 **11 Claims**

1. In a magnetron comprising an evacuated envelope including an annular wall anode and sealing end walls sealing both ends of the annular wall anode in airtight relationship, said annular wall anode and sealing end walls being made of permeable material forming portions of a magnetic circuit, anode assembly means including a plurality of anode vanes mounted on the inside of said annular wall anode and extending from said wall within the envelopes, cathode assembly means including a cathode filament mounted within said envelope coaxial with the center axis of said annular wall anode and support plate means located at each end of said cathode filament, permanent magnet means positioned adjacent each end of the cathode assembly means, output means for transmitting microwave oscillations including an output antenna extending from said anode assembly means and coupled to said envelope, input means including cathode leads coupled to each of said support plate means of the cathode assembly means, insulating member means mounted in one of said sealing end walls in airtight relationship, said cathode leads passing through said insulating member means in airtight sealing relationship, and a

magnetic pole piece mounted within said envelope between one of said permanent magnet means and one of said cathode assembly support plate means, the improvement characterized in that said annular wall anode means comprises a smaller cross-sectional area cylindrical wall first portion and a greater





cross-sectional area annular wall second portion, said first and second portions of the annular wall anode being integrally formed, said input and output member means being coupled to the greater cross-sectional area second portion, thereby improving the spacing of components and enhancing the cooling of components in said magnetron.

4,280,079

DRIVING SYSTEM FOR A PLASMA DISPLAY PANEL

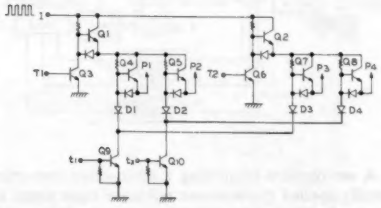
Kazunori Nishida, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Jun. 11, 1979, Ser. No. 47,328

Claims priority, application Japan, Jun. 10, 1978, 53-70261; Nov. 10, 1978, 53-138679

Int. Cl.³ H05B *37/00, 41/00*

U.S. Cl. 315—169.4 **14 Claims**



1. A driving system for a plasma display wherein a pair of insulator plates have a plurality of electrodes thereon, coated with dielectic layers, said plates being disposed in an opposed relationship with a gas discharge medium sandwiched therebetween, said system comprising:

a. a first switching means for passing a toggled voltage from one end of said first switching means to the other end thereof;

b. a plurality of a second switching means commonly connected to said other end of first switching means, for passing said toggled voltage to a selected one of said electrodes; and

c. a plurality of third switching means respectively connected to said electrodes for clamping all of said electrodes at other than said selected one electrode at a fixed potential.

4,280,080

DEFLECTION-COIL SYSTEM FOR COLOR PICTURE TUBES

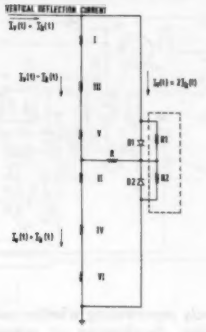
Patrick Brown, Straubing, Fed. Rep. of Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Sep. 12, 1979, Ser. No. 74,644

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1978, 2839935

Int. Cl.³ H01J *29/70, 29/76*

U.S. Cl. 315—368 **9 Claims**



1. A deflection-coil system for a multibeam color-picture tube to provide a vertical deflection field and a 45°/45° four-pole field for dynamic convergence correction superimposed on said deflection field comprising:

a vertical deflection toroidal coil having two halves each of which are separated into three component windings;

first means to connect alternate ones of said six component windings into two groups of three series connected component windings each; and

second means connected to said two groups of component windings to produce a current traversing each of said two groups of component windings to provide said vertical deflection field and said 45°/45° four-pole field simultaneously.

4,280,081

MOTOR DRIVE SYSTEM WITH INERTIA COMPENSATION

Edward H. Dinger, Waynesboro, and Allen M. Ritter, Rocky Mount, both of Va., assignors to General Electric Company, Salem, Va.

Filed Dec. 21, 1979, Ser. No. 105,907

Int. Cl.³ B65H *59/38*

U.S. Cl. 318—6 **22 Claims**

1. A motor control system for use with a d.c. shunt motor, having separately excitable armature and field windings, operable to wind a web of material into a coil comprising:

(a) a first variable voltage source for supplying electrical power to said field winding;

(b) a second variable voltage source for supplying electrical power to said armature winding;

(c) means to sense the linear speed of said web and to provide a speed feedback signal proportional thereto;

(d) means to provide a signal proportional to the armature voltage of said motor;

(e) means responsive to said speed feedback signal and said armature voltage signal to provide a control signal for said first variable voltage source whereby the voltage supplied

to said field winding is controlled to thereby maintain a prescribed relationship between web material speed and armature voltage;

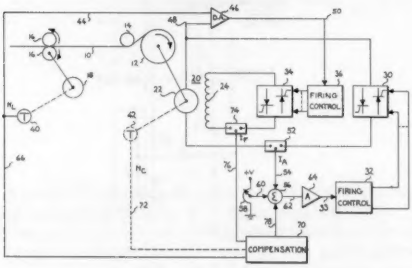
(f) reference means for providing a reference signal proportional to a desired level of operation of said motor;

(g) feedback means for providing a current feedback signal proportional to the current in said armature winding;

(h) means for combining said reference signal, said current feedback signal and an inertia compensation signal to develop a control signal for controlling the operation of said second variable voltage to thereby control the electrical power supplied to said armature winding;

(i) means for generating said inertia compensation signal comprising:

(1) means responsive to said speed feedback signal for generating a modifying signal having distinct values



respectively representing whether said web material is accelerating, decelerating or remaining constant in speed;

(2) means to provide an additional feedback signal proportional to the extant radius of the web material coil radius; and,

(3) means responsive to said additional feedback signal for generating first and second clamp limit signals, said first clamp limit signal having values which increase with an increase in web coil radius and said second clamp limit signal having values which decrease with an increase in said web coil radius; and,

(j) clamp means for gating said inertia compensation signal to said combining means as a function of the state of said modifying signal and the value of the larger of the first and second clamp limit signals.

4,280,082

DIGITAL DC MOTOR SPEED CONTROL CIRCUIT

Rajguru M. Acharya, Neptune Township, Monmouth County, N.J., and James R. Del Signore, II, Ithaca, N.Y., assignors to NCR Corporation, Dayton, Ohio

Filed Apr. 23, 1979, Ser. No. 32,449
Int. Cl.[3] H02P 5/16
U.S. Cl. 318—341 **11 Claims**

1. A circuit for controlling the speed of a D.C. motor to which a variable torque and a voltage pulse is applied to the motor and where the width of the pulse is inversely proportional to the speed of the motor, comprising:

a source of supply voltage whose level varies with the speed of the motor;

pickup means mounted on said motor for generating a plurality of analog waveform signals representing the rotational speed of the motor;

logic means coupled to the output of said pickup means for generating a reset rectangular waveform signal for each analog waveform signal received;

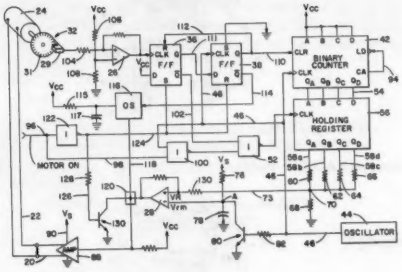
a source of clock pulses;

counter means coupled to said source of clock pulses and to the output of said logic means to count said clock pulses and to be reset with each reset signal;

means coupled to the output of said counter means to generate a time-varying reference voltage signal in accordance with the output count of said counter means;

means coupled to said supply voltage for generating a ramp voltage whose slope varies in accordance with the level of the supply voltage applied to the motor;

comparing means coupled to said reference signal generating means and said ramp voltage generating means for



generating a control signal upon said ramp voltage becoming equal to said voltage output;

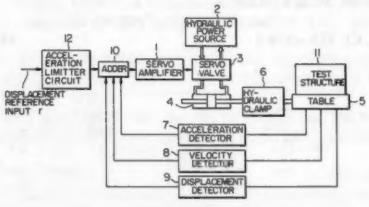
and amplifier means coupled to the output of said comparing means and said supply voltage for outputting a voltage pulse to the motor whose width is selected substantially in accordance with the time said control signal is generated by said comparing means.

4,280,083

APPARATUS FOR LIMITING ACCELERATION IN A SERVOSYSTEM

Hiromu Hirai, Yatabemachi, and Shin Hamano, Shimoinayoshi, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 17, 1979, Ser. No. 58,370
Claims priority, application Japan, Jul. 17, 1978, 53-86099
Int. Cl.[3] G05B 23/02
U.S. Cl. 318—565 **4 Claims**



1. A servosystem comprising a servo-valve converting an externally applied displacement reference input signal into a corresponding hydraulic power, an actuator driven by the hydraulic power supplied from said servo-valve, a movable part actuated by said actuator to make controlled displacement, an acceleration limiter circuit comprising means for producing an acceleration signal on the basis of the displacement reference input signal, limiting the amplitude of the acceleration signal to a level lower than a predetermined level, producing a displacement signal on the basis of the limited acceleration signal, and applying this displacement signal to said servo-valve, a slow stop instruction circuit comparing the amplitude of the acceleration signal from said acceleration limiter circuit with a predetermined setting and generating a slow stop instruction signal for slowly stopping the motion of said movable part when the amplitude of the acceleration

signal exceeds the setting, and a slow stop circuit attenuating the displacement signal from said acceleraton limiter circuit in response to the slow stop instruction signal applied from said slow stop instruction circuit thereby slowly stopping the motion of said movable part.

4,280,084

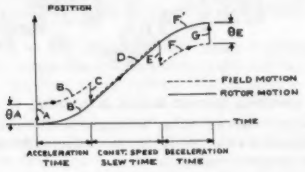
METHOD OF AND APPARATUS FOR OPERATING STEPPING MOTORS

David Chiang, 649 Caledonia Rd., Dix Hills, N.Y. 11746

Continuation-in-part of Ser. No. 872,656, Jan. 26, 1978, Pat. No. 4,215,302. This application Oct. 9, 1979, Ser. No. 82,742

Int. Cl.³ G05B *19/40*

U.S. Cl. 318—696 **17 Claims**



1. The method of driving a stepping motor from a first velocity to a second velocity, said stepping motor having a stator means for generating a revolvable magnetic field and a rotor whose angular position is influenced by the revolvable magnetic field, said method comprising first angularly displacing the revolvable magnetic field with respect to the rotor by a first displacement angle, in a given direction of revolution, continuously revolving the revolvable magnetic field until the rotor rotates at the second velocity, second angularly displacing the revolvable magnetic field with respect to the rotor by a second displacement angle in a direction of revolution opposite said given direction, and revolving the revolvable magnetic field at the second velocity.

4,280,085

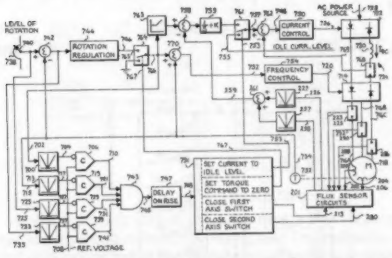
APPARATUS AND METHOD FOR PROVIDING A SIGNAL PROPORTIONAL TO FLUX IN AN AC MOTOR FOR CONTROL OF MOTOR DRIVE CURRENT

John H. Cutler, Roanoke, and Loren H. Walker, Salem, both of Va., assignors to General Electric Company, Salem, Va.

Filed Apr. 24, 1979, Ser. No. 32,856

Int. Cl.³ H02P *5/34, 5/36*

U.S. Cl. 318—803 **27 Claims**



1. A system for generating a drive current of variable current magnitude and frequency that drives an AC induction motor, comprising:

(a) means for providing a first signal proportional to the rate of change of the flux of said motor;

(b) means for supplying a second signal proportional to said current magnitude of said drive current; and

(c) means for generating a flux signal proportional to the integral of said first signal when said frequency of said drive current is above a preselected value and which is proportional to said second signal when said frequency of said drive current is below said preselected value, said flux signal being effective to control the generation of said drive current.

4,280,086

METHOD OF AND CIRCUIT ARRANGEMENT FOR DISCHARGING A STORAGE CAPACITOR

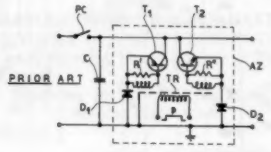
Giancarlo Babini, Turin, Italy, assignor to CSELT Centro Studi e Laboratori Telecomunicazioni S.p.A., Turin, Italy

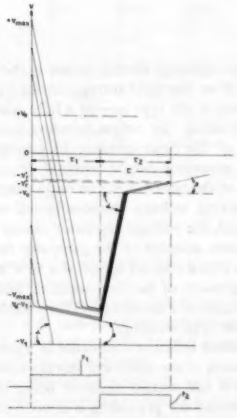
Filed Dec. 27, 1979, Ser. No. 107,661

Claims priority, application Italy, Dec. 28, 1978, 69975 A/78

Int. Cl.³ H02J *3/00, 15/00*

U.S. Cl. 320—1 **6 Claims**





4. A circuit arrangement for periodically dissipating the charge of a storage capacitor provided with intermittently conducting gate means for charging said capacitor with message samples within a predetermined range of positive and negative signal amplitudes between resetting intervals, comprising:

a first electronic switch connected across said capacitor in series with a source of unipolar biasing voltage of an absolute magnitude substantially exceeding the maximum signal amplitude of the same polarity;

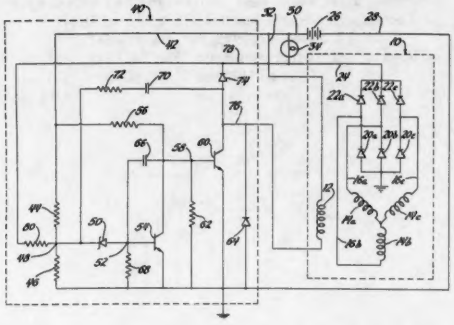
a second electronic switch connected across said capacitor in parallel with the series combination of said first switch and said source; and

timing means for closing said first switch during a first phase of each resetting interval, thereby charging said capacitor to a level close to said biasing voltage, and closing said second switch during a second phase of each resetting interval following said first phase, thereby discharging said capacitor to a level close to zero.

4,280,087
VOLTAGE REGULATOR

Stanley J. Kasiewicz, Southfield, Mich.

Continuation of Ser. No. 855,105, Nov. 25, 1977. This application Sep. 19, 1979, Ser. No. 76,882
Int. Cl.[3] H02J 7/14
U.S. Cl. 322—28 4 Claims



1. A voltage regulator circuit for use in the regulation of the energization of an electrical storage device by a generator, the generator being of the type having a field winding and at least one output winding, the output winding being responsive to energization of the field winding to provide an energizing voltage on a generator output terminal, the electrical storage device being of the type having an output terminal for receiving an energizing voltage interconnected to the generator output terminal, the voltage regulator circuit comprising:

control means, coupled to the generator field winding, and responsive to a control signal of a first level for enabling the energization of the field winding, and responsive to a control signal of a second level for disabling the energization of the field winding;

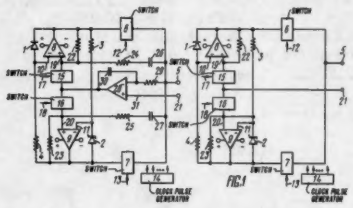
first and second resistors connected in a series circuit across the terminals of the electrical storage device, the junction of the first and second resistors being connected to the control means for providing a control signal of the first level when the energization of the electrical storage device is below a first predetermined threshold and of the second level when the energization exceeds the first predetermined threshold; and

a third resistor connected in a series circuit with said second resistor across the terminals of the generator, all of said resistors being bilateral resistors and both of said series circuits being bilaterally conductive, said first resistor and said third resistor being in parallel circuit relation to each other and having ohmic values for providing, upon the occurrence of a fault in the interconnection between output terminals of the generator and electrical storage device, a control signal of the first level when the energizing voltage on the generator output terminal is below a second, predetermined threshold, and of the second signal level when the energizing voltage exceeds the second predetermined threshold and a fault indicator connected directly between the output terminal of the generator and the output terminal of the storage device and being energized upon said occurrence of said fault.

4,280,088
REFERENCE VOLTAGE SOURCE

Toom A. Pungas, bulvar Sypruse, 219, kv. 3, Tallin, U.S.S.R.

Filed Oct. 25, 1978, Ser. No. 954,576
Claims priority, application U.S.S.R., Nov. 1, 1977, 2531855
Int. Cl.[3] G05F 3/04
U.S. Cl. 323—304 4 Claims



1. A reference voltage source, comprising

a bridge network having two opposite arms each including a respective zener diode, and two other arms each including a respective resistor;

two operational amplifiers each having an inverting input, a non-inverting input, and an output, the inverting input of said first operational amplifier being coupled to the anode of a first one of said two zener diodes, the inverting input of said second operational amplifier being coupled to the cathode of said second zener diode, the output of said first operational amplifier being coupled to the cathode of said first zener diode, and the output of said second operational amplifier being coupled to the anode of said second zener diode;

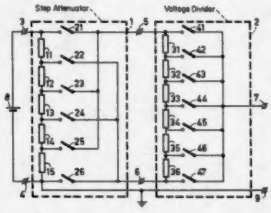
two switches each having an input and an output, a control voltage from the reference voltage source being applied to the inputs of said switches, and the outputs of said switches being coupled respectively to the non-inverting inputs of said operational amplifiers; and

an output terminal to which the outputs of said operational amplifiers are alternately connected.

4,280,089
AUTOMATIC INCREMENTING ATTENUATION ARRANGEMENT

Rudy J. van de Plassche, and Eise C. Dijkmans, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 26, 1979, Ser. No. 88,734
Claims priority, application Netherlands, Nov. 14, 1978, 7811229
Int. Cl.[3] G05F 3/08
U.S. Cl. 323—354 4 Claims



1. An attenuation arrangement comprising:

a step attenuator having two input terminals, a first and a second output terminal and a reference terminal, a series arrangement of n attenuating elements connected between said input terminals, said series arrangement comprising

$n+1$ coupling points, defined respectively as C_1, C_2, . . . C_{n+1}, which successively correspond to the free end of the first attenuating element, the common junctions of the successive attenuating elements and the free end of the last attenuating element in the series arrangement, and a switching circuit arranged between the coupling points and the output terminals for coupling selectably the attenuation elements to said output terminals;

a voltage divider having two inputs coupled respectively to said first and second output terminals of said step attenuator, a voltage dividing arrangement connected between said inputs, an output and a coupling arrangement for selectably coupling said output to a part of the voltage divider arrangement; and

a control arrangement for controlling the switching circuit of the step attenuator and the coupling arrangement of the voltage divider,

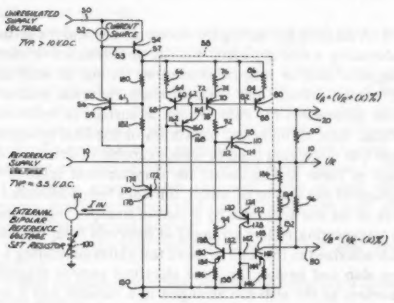
characterized in that the switching circuit is arranged to selectably couple the first output terminal with any of the alternate coupling points starting with C_1 and to selectably couple the second output terminal with any of the other alternate coupling points starting with C_2, whereby when switching the two output terminals of said step attenuator from a first to an adjacent second attenuation element under the control of said control arrangement, the connection through said switching circuit of the common junction between said two adjacent attenuation elements and one of said two output terminals is maintained while the connection from the other one of said output terminals to the end of said first attenuation element, located opposite from the common junction is switched over to the end of the second attenuation element located opposite the common junction thereby preventing the occurrence of voltage peaks.

4,280,090

TEMPERATURE COMPENSATED BIPOLAR REFERENCE VOLTAGE CIRCUIT

Charles R. Lindberg, Yorba Linda, Calif., assignor to Silicon General, Inc., Garden Grove, Calif.

Filed Mar. 17, 1980, Ser. No. 131,256
Int. Cl.³ G05F 1/56
U.S. Cl. 323—315 **9 Claims**



1. An electronic circuit for generating a first reference voltage and a second reference voltage, said first reference voltage and said second reference voltage being equal in magnitude but of opposite polarity with respect to a reference supply voltage, said electronic circuit comprising:

a source of electrical current;

a first means for duplicating current coupled to said source of electrical current and having output current and input current, said first means being so configured that said output current is proportional in magnitude to said input current;

a second means for duplicating current coupled to said source of electrical current and to said first means for duplicating current, and having output current and input current, said second means being so configured that said output current is proportional in magnitude to said input current;

said input current of said second means being an output current of said first means;

output current of said first means flowing through a first resistor so as to generate said first reference voltage;

output current of said second means flowing through a second resistor so as to generate said second reference voltage; and

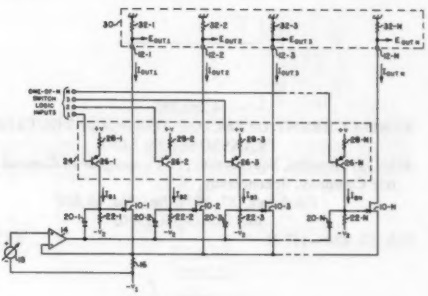
a single and selectable resistor coupled to said first means for duplicating current whereby selection of a value of resistance for said resistor determines the magnitude of said first and second reference voltages.

4,280,091

VARIABLE CURRENT SOURCE HAVING A PROGRAMMABLE CURRENT-STEERING NETWORK

David F. Hiltner, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Oct. 29, 1979, Ser. No. 89,067
Int. Cl.³ G05F 1/44
U.S. Cl. 323—315 **4 Claims**



1. A current source for providing current to a plurality of output nodes, comprising:

a voltage follower comprising an operational amplifier having inverting and non-inverting inputs and an output, wherein said output is coupled to said inverting input to thereby provide an output loop;

a current-setting resistor connected to said inverting input;

a voltage generator connected to said non-inverting input to provide a reference voltage for said current-setting resistor;

a plurality of field-effect transistors switchable into and out of said output loop, said field-effect transistors being associated with respective ones of said plurality of current output nodes and being adapted to conduct substantially all of the current produced by said current-setting resistor; and

means for switching said field-effect transistors into and out of said output loop.

4,280,092

GROUND FAULT INTERRUPTER TESTER

Peter M. Wells, Jr., Sycamore, Ill., and Roger E. Mitchell, Minneapolis, Minn., assignors to Ideal Industries, Inc., Sycamore, Ill.

Filed Apr. 23, 1979, Ser. No. 32,349
Int. Cl.³ G01R 31/02
U.S. Cl. 324—51 **8 Claims**

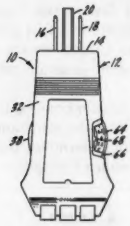
1. A hand-held ground fault interrupter tester comprising:

a housing,

a potentiometer contained within the housing,

electrical terminal blades mounted in the housing and protruding from one end in fixed positional relationship for insertion into a wall receptacle,

electrical connecting means between the potentiometer and



terminal blades, said means permitting a potentiometer-controlled current leakage to the ground path which, upon reaching a desired level, will trip a properly functioning ground fault interrupter so that tripping at a lower level or failure to trip at higher levels will indicate a defective interrupter.

4,280,093

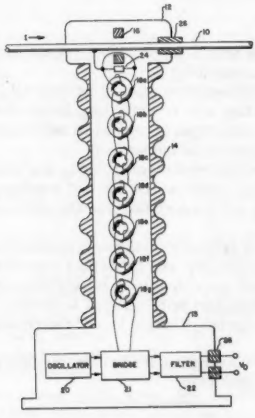
ZERO-CURRENT DETECTOR FOR HIGH VOLTAGE DC TRANSMISSION LINE

John M. Houston, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Aug. 27, 1979, Ser. No. 69,835

Int. Cl.³ G01R *15/02*

U.S. Cl. 324—117 R **8 Claims**



1. A zero-current detector for a high voltage, multi-conductor DC power transmission line comprising:

a saturable magnetic reactor disposed about one of said conductors;

a cascade step-down transformer electromagnetically coupled to said reactor; and

means to detect impedance changes in said magnetic reactor, said detection means being connected to said reactor through said transformer cascade.

4,280,094

TEST PLATE METHOD AND AN ARRANGEMENT FOR TESTING THE SERVICEABILITY AND FOR SETTING AND CALIBRATING A TEST APPARATUS FOR THE NON-DESTRUCTIVE ELECTRICAL OR MAGNETIC TESTING OF METALLIC BLANKS

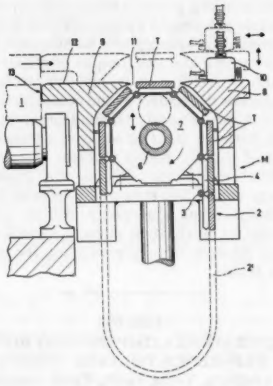
Per-Olle Karlsson, Oxelösund, Sweden, assignor to Svenskt Stal Aktiebolag, Stockholm, Sweden

Filed Dec. 14, 1978, Ser. No. 969,274

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1977, 2756244

Int. Cl.³ G01R *35/00, 33/00*

U.S. Cl. 324—202 **19 Claims**



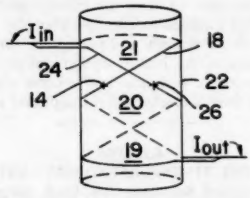
1. A method for testing the serviceability and for setting and calibrating a test apparatus for the non-destructive electrical, magnetic and/or magneto-inductive testing of steel slabs of different thickness and with different electrical and/or magnetic parameters for defects such as surface or below-surface cracks, laps, shrinkholes, blowholes or the like, comprising at least one inspecting head or sensor capable of detecting defects such as these and mounted for displacement relative to the surface of the slab to be tested, the slabs being delivered to the area of the test apparatus by means of transporting means, such as transporting rollers arranged at intervals from one another, characterized in that one or more test plates simulating a defective slab and having the same electrical and/or magnetic parameters as the slab are arranged in a raisable and lowerable test plate holder along one side of the slab to be tested, said test plate or plates extending substantially along the whole length of said side of said slab, and by raising or lowering said test plate holder are brought into a position in which they are in substantial alignment with the upper surface of the slab to be tested, and for setting said test apparatus said sensor is brought into contact with the surface of the test plate or plates and/or the surface of the test plate holder, which surface of the test plate holder is in alignment with the surface of the test plate or plates, and the sensor, when travelling towards and/or away from the upper surface of the slab to be tested simultaneously travels over the test plate or plates, and, while doing so, is tested for working order and calibrated.

4,280,095

EXTREMELY SENSITIVE SUPER CONDUCTING QUANTUM INTERFERENCE DEVICE CONSTRUCTED AS A DOUBLE-HELIX ARRAY

George F. Hinton, Pass Christian, Miss., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 22, 1979, Ser. No. 22,764
Int. Cl.³ G01R *33/035;* H01L *39/22*
U.S. Cl. 324—248 **4 Claims**



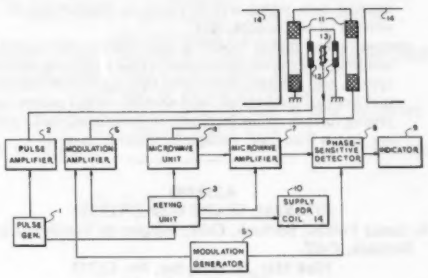
1. A SQUID array device comprising:
(a) a solid flux path of constant cross-section area along one body axis having a first groove with an upper and a lower end and having very close turns scribed into the surface of said flux path about said body axis;
(b) a first conducting material deposited in said first groove;
(c) a first Josephson Junction attached at some point on said first groove;
(d) a first layer of non-conducting material uniformly deposited over the surface of said flux path;
(e) a second groove having an upper and a lower end and having very close turns scribed into the surface of said first layer of non-conducting material, said second groove having depth less than the thickness of said first layer of non-conducting material, pitch similar to that of said first groove and sense opposite that of said first groove such that said turns of said first groove and said turns of said second groove are intermeshed and coaxially aligned;
(f) a second conducting material deposited in said second groove;
(g) a second Josephson Junction attached at some point on said second groove;
(h) a second layer of non-conducting material uniformly deposited over the surface of said flux path;
(i) a third groove having an upper and a lower end and having very close turns scribed into the surface of said second layer of non-conducting material, said third groove having depth less than the thickness of said second layer of non-conducting material, pitch similar to that of said first and said second groove and sense similar to that of said first groove such that said turns of said third groove are intermeshed and coaxially aligned with said turns of said second groove;
(j) a third conducting material deposited in said third groove;
(k) a third Josephson Junction attached at some point on said third groove;
(l) a third layer of non-conducting material uniformly deposited over the surface of said flux path;
(m) a fourth groove having an upper and a lower end and having very close turns scribed into the surface of said third layer of non-conducting material, said fourth groove having depth less than the thickness of said third layer of non-conducting material, pitch similar to that of said first, second and third grooves and sense opposite that of said third groove such that said turns of said fourth groove are intermeshed and coaxially aligned with said turns of said third groove;
(n) a fourth conducting material deposited in said fourth groove;
(o) a fourth Josephson Junction attached at some point on said fourth groove;
(p) a fourth layer of non-conducting material uniformly deposited over the surface of said flux path;
(q) first means for connecting said upper and said lower ends of said first groove to respective said upper and said lower ends of said second groove forming a first double groove array;
(r) second means for connecting said upper and said lower ends of said third groove to respective said upper and said lower ends of said fourth groove forming a second double groove array; and
(s) third means for connecting said first and said second double groove arrays.

4,280,096

SPECTROMETER FOR MEASURING SPATIAL DISTRIBUTIONS OF PARAMAGNETIC CENTERS IN SOLID BODIES

Wolfgang Karthe, Jena, and Eike Wehrsdorfer, Eisenberg, both of German Democratic Rep., assignors to Akademie der Wissenschaften der DDR, Berlin, German Democratic Rep.

Filed Nov. 7, 1978, Ser. No. 959,185
Int. Cl.³ G01N *27/00*
U.S. Cl. 324—316 **5 Claims**



1. In a spectrometer which contains a field coil, modulating coils, and gradient coils and applies a modulated inhomogeneous magnetic field to a sample, an improvement comprising:
means for adjusting orientation of the modulating coils and gradient coils with respect to the sample;
a modulation generator providing a modulating waveform for use in the modulating coils;
a pulse generator providing pulses for use in the gradient coils;
a first means connected to the sample and responsive to resonance thereof; and
a keying unit cooperating with the modulation generator, the pulse generator, and the first means, the keying unit operating in a manner that the modulated inhomogeneous magnetic field is applied in pulses and the first means responds to resonance of the sample during and only during such pulses.

4,280,097

ISOLATED DC VOLTAGE MONITORING SYSTEM

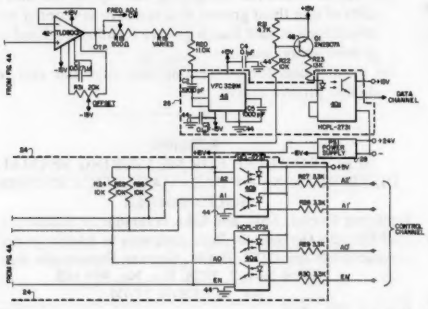
Richard L. Carey, Cardiff, and Gale W. McGuffey, San Diego, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 14, 1980, Ser. No. 167,874
Int. Cl.³ G01N *27/02*
U.S. Cl. 324—434 **13 Claims**

1. Apparatus for electrically isolating a DC voltage source while the voltage of said source is being monitored, said apparatus comprising:

electronic switching means for selectively coupling said apparatus to said source;

first optical means coupled to said switching means and receiving a control signal which directs the operation of said switching means, said first optical means comprising means for electrically isolating said switch means from a voltage monitoring system which generates said control signal;



means coupled to said switching means for generating an internal data signal which varies in relationship to the voltage of said source; and

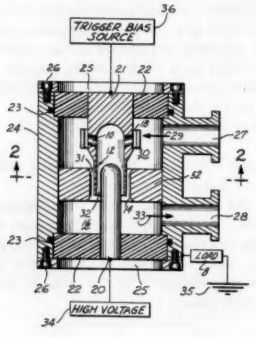
second optical means receiving said internal data signal for coupling an external data signal to said voltage monitoring system, said external data signal varying in relationship to said internal data signal, said second optical means comprising further means for electrically isolating said switching means from said voltage monitoring system.

4,280,098

COAXIAL SPARK GAP SWITCH

S. James Veraldi, Burbank, Calif., assignor to Veradyne Corp., Burbank, Calif.

Filed May 25, 1979, Ser. No. 42,722
Int. Cl.[3] H01T *3/00, 1/08*
U.S. Cl. 328—59 **9 Claims**



1. A multiple-gap spark gap switch, comprising:

a first chamber having an inlet port for admitting a fluid;

a second chamber having an outlet port to permit egress of the fluid;

a first electrode partitioning said first chamber from said second chamber and having more than one separate passages extending through it, said first chamber communicating with said second chamber through the passages in said first electrode;

trigger electrodes each associated with one of the passages in said first electrode, each having a hollow cylindrical portion extending from within said first chamber into and concentric with the passage with which it is associated, that part of each hollow cylindrical portion lying within said first chamber having an opening to permit fluid to pass inside said hollow cylindrical portion from said first chamber to said passage; and,

a set of second electrodes each associated with one of said trigger electrodes, each extending from within said second chamber into the trigger electrode with which it is associated and concentric with that trigger electrode, said set of second electrodes all being electrically interconnected;

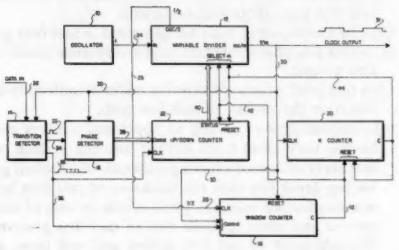
whereby, fluid supplied to said first chamber through said inlet port flows through said passage on both the insides and outsides of the hollow cylindrical portions of said trigger electrode and into said second chamber, from which the fluid is discharged through said outlet port.

4,280,099

DIGITAL TIMING RECOVERY SYSTEM

Glen D. Rattlingourd, Salt Lake City, Utah, assignor to Sperry Corporation, New York, N.Y.

Filed Nov. 9, 1979, Ser. No. 92,765
Int. Cl.[3] H03K *5/26;* **H03L** *7/00*
U.S. Cl. 328—63 **13 Claims**



1. A digital timing recovery system for producing a clock signal in synchronization with received digital data comprising:

an oscillator for generating a fixed frequency signal;

clock derivation means coupled to said oscillator for deriving from said fixed frequency signal said clock signal, said clock signal having a frequency that is 1/m of said fixed frequency signal where m is a variable derivation factor, and said clock signal further having a clocking transition that separates one clock cycle from another;

data transition detector means responsive to said received digital data for detecting data transitions of said received digital data and for generating a data transition pulse coincident with said detected data transition;

time comparison means coupled to said clock derivation means, oscillator, and said data transition detector means for comparing and measuring the time at which said output data transition pulse occurs with respect to the time at which said clocking transition of said clock signal occurs and for producing error and timing signals in response to the results of said time comparison and measurement; and

update means coupled to said clock derivation means and responsive to said error and timing signals for increasing the value of m when said data transition occurs after said clocking transition, and for decreasing the value of m when said data transition occurs before said clocking transition, said increase and decrease of m occurring frequently if the time difference between said data transition pulse and said clocking transition is greater than a predetermined time measurement of said time comparison means, and said increase and decrease of m occurring less frequently if the time difference between said data transi-

tion pulse and said clocking transition is less than said predetermined time measurement,

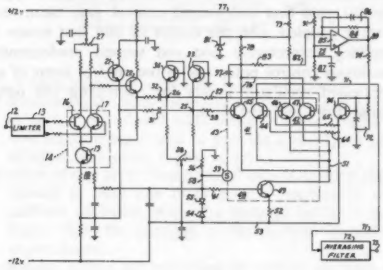
whereby said clock signal quickly synchronizes with said received digital data and smoothly maintains said synchronization thereafter.

4,280,100

TIME MODULATION PULSE AVERAGING DEMODULATOR

Bert H. Dann, South Pasadena, Calif., assignor to Bell & Howell Company, Chicago, Ill.

Filed Sep. 20, 1979, Ser. No. 77,511
Int. Cl.³ H03D 3/14; H03K 9/04, 9/06, 9/08
U.S. Cl. 329—103 **11 Claims**



1. In a method of demodulating, with the aid of four transistors grouped in two comparator pairs, a carrier time modulated by an information signal, the improvement comprising in combination the steps of:

matching all four transistors with each other at least as to base-emitter drop;

providing a single constant current source for all four transistors;

metallically interconnecting emitters of said four transistors with each other and with an output of said single constant current source;

applying a common threshold reference voltage to one transistor in one comparator pair and one transistor in the other comparator pair;

generating first and second repetitive pulses in response to alternate successive zero crossings of said time modulated carrier;

controlling the other transistor in said one comparator pair with said first pulses and the other transistor in said other comparator pair with said second pulses to generate a train of constant area pulses corresponding to zero crossings of said time modulated carrier; and

reproducing said information signal by averaging constant area pulses in said train.

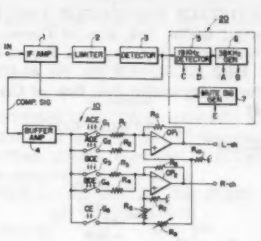
4,280,101

STEREOPHONIC SIGNAL DEMODULATION CIRCUIT

Kohji Ishida, and Tatsuo Numata, both of Tokyo, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jul. 2, 1979, Ser. No. 54,117
Claims priority, application Japan, Jun. 30, 1978, 53-80008
Int. Cl.³ H03D 1/00
U.S. Cl. 329—167 **14 Claims**

1. In a stereophonic signal demodulation circuit which receives an input signal including a signal modulated with first and second channel information to separate said first and second channel information from each other, the improvement comprising: first and second operational ampiifiers; a first switching means for applying said input signal to one input terminal of said first operational amplifier, a second switching means for applying said input signal to one input terminal of said second operational amplifier; and control means for controlling the operations of said first and second switching means; wherein said first and second operational amplifiers output said first and second channel information, respectively, and said first switching means comprises a parallel circuit of first and second switch elements each coupled to said first



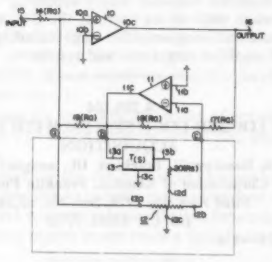
operational amplifier through first and second resistors, respectively, and said second switching means comprises a second parallel circuit of third and fourth switch elements each coupled to said second operational amplifier through third and fourth resistors, respectively.

4,280,102

FREQUENCY RESPONSE CHARACTERISTIC ADJUSTABLE CIRCUIT

Kenji Yokoyama, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Nov. 23, 1979, Ser. No. 96,914
Claims priority, application Japan, Dec. 4, 1978, 53-149796
Int. Cl.³ H03F 1/34
U.S. Cl. 330—85 **13 Claims**



1. A frequency response characteristic adjustable circuit comprising:

a first operational amplifier having its first input terminal connected through a first resistor to an input terminal for receiving an input signal, its second input terminal connected to circuit ground and its output terminal connected to an output terminal for taking out an output signal;

a second operational amplifier having its first input terminal connected to circuit ground, its second input terminal connected through a second resistor to said output terminal of said first operational amplifier and its output terminal connected through a third resistor to said second input terminal of said second operational amplifier and also connected through a fourth resistor to said first input terminal of said first operational amplifier;

a potentiometer having a first fixed terminal connected to said first input terminal of said first operational amplifier, a second fixed terminal connected to said second input terminal of said second operational amplifier, a center tap connected to circuit ground and a slider terminal; and

a filter circuit having a first terminal connected to said out-

put terminal of said second operational amplifier, a second terminal connected to said slider terminal of said potentiometer and a third terminal connected to circuit ground.

4,280,103

MULTISTAGE TRANSISTOR AMPLIFIER

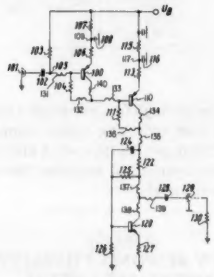
Bonno Poppinga, Berlin, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 31, 1979, Ser. No. 62,475

Claims priority, application Fed. Rep. of Germany, Aug. 8, 1978, 2834641

Int. Cl.³ H03F *3/04*

U.S. Cl. 330—290 **10 Claims**



1. A multistage transistor amplifier for amplifying alternating voltages comprising at least two successive cascade-connected amplifier stages having d.c. feedback, a following amplifier stage a.c. coupled to the output of said cascade-connected amplifier stages, and a resistor coupling said following amplifier stage to said cascade-connected amplifier stages, said cascade-connected amplifier stages supplying said following amplifier stage with direct current, the d.c. operating resistance for said following amplifier stage including said cascade-connected amplifier stages and said resistor.

4,280,104

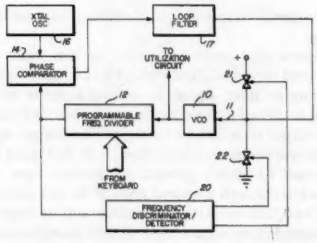
PHASE LOCKED LOOP SYSTEM WITH IMPROVED ACQUISITION

Theodore S. Rzeszewski, Lombard, Ill., assignor to Matsushita Electric Corporation of America, Franklin Park, Ill.

Filed Aug. 10, 1979, Ser. No. 65,589

Int. Cl.³ H03L *7/00*

U.S. Cl. 331—1 A **13 Claims**



1. In a phase-locked circuit in which the frequency of a controlled oscillator means is locked to that of a reference signal, a system for improving the acquisition time including in combination:

first means having first and second inputs and having an output coupled with the control input of said controlled oscillator means, the first input thereof coupled to receive said reference signal and the second input thereof coupled to the output of said controlled oscillator means for producing a control signal on the output thereof representative of the phase difference between said reference signal and the signal produced by said controlled oscillator;

frequency discriminator/detector means coupled with the output of said controlled oscillator and producing a first output signal when the frequency of said controlled oscillator means is a predetermined amount above a desired frequency and producing a second output signal when the frequency of said controlled oscillator means is a predetermined amount below such desired frequency; and

first and second control gate means each having a control input coupled to receive respectively, the first and second output signals of said frequency discriminator means and each operated in response to such output signals applied thereto, said first and second control gate means each further coupled with the output of said first means for applying respectively first and second predetermined maximum control potentials to the control input of said controlled oscillator means for overriding the output signals from said first means.

4,280,105

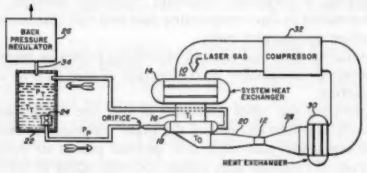
LASER GAS TEMPERATURE CONTROL AND SPACIAL EQUALIZER

Robert D. Marcy, Chatsworth, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jan. 26, 1979, Ser. No. 6,840

Int. Cl.³ H01S *3/045, 3/095*

U.S. Cl. 331—94.5 P **3 Claims**



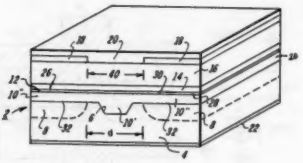
1. In a laser system including a laser cavity with means for supplying a flow of laser gas through said cavity; apparatus for providing a substantially uniform laser gas inlet temperature T_o, without temperature transients and spacial temperature gradients at the laser inlet nozzle of the flow through the cavity, comprising: a first, large capacity, heat exchanger, upstream of said laser cavity, for providing a heat exchanger exit temperature T_i, with a nominal time dependent tolerance; a second, boiling liquid, heat exchanger connected in series with the first heat exchanger and positioned between the first heat exchanger and the laser inlet nozzle; a coolant supply tank with supply and return lines from the second heat exchanger for supplying liquid coolant to said second heat exchanger; a back pressure regulator connected to said tank for maintaining the saturated liquid temperature of the coolant slightly below the desired laser inlet temperature T_o; and means, providing a coolant flow through said second heat exchanger for removing a maximum heat load corresponding to the tolerance of said first heat exchanger while maintaining boiling liquid operation of the second heat exchanger.

4,280,106

STRIPED SUBSTRATE PLANAR LASER

Donald R. Scifres, Los Altos; Robert D. Burnham, Los Altos Hills, and William Streifer, Palo Alto, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed May 15, 1979, Ser. No. 39,425
Int. Cl.³ H01S 3/19
U.S. Cl. 331—94.5 H **7 Claims**



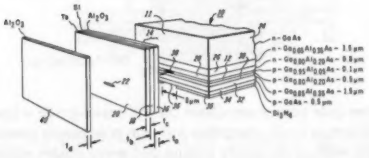
1. A heterojunction solid state laser comprising:
a semiconductor body including a substrate and a plurality of layers, one of said layer being an active region layer, said layers being doped to provide a rectifying junction adjacent said active region layer;
another of said layers being a layer of non-uniform thickness having at least one thick portion, said layer of non-uniform thickness being of a material having a bandgap higher than the bandgap of the material of said active region layer;
resonator means for providing an optical resonant cavity including said active region layer;
electrode means on the substrate and non-substrate sides of said semiconductor body for the application of forward bias to said rectifying junction to provide pump current to said active region layer of said laser; and
pump current confining means for providing that the path of said pump current includes said thick portion of said layer of non-uniform thickness and that the width of the path of said pump current is substantially wider than the width of said thick portion of said layer of non-uniform thickness.

4,280,107

APERTURED AND UNAPERTURED REFLECTOR STRUCTURES FOR ELECTROLUMINESCENT DEVICES

Donald R. Scifres, Los Altos; Fernando A. Ponce, Stanford; G. A. Neville Connell, Cupertino, and William Streifer, Palo Alto, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 8, 1979, Ser. No. 64,698
Int. Cl.³ H01S 3/19
U.S. Cl. 331—94.5 H **26 Claims**



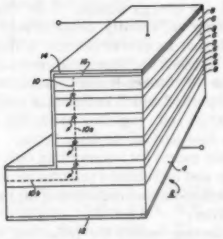
1. In a semiconductor laser device including an active layer formed at a p-n junction in the device capable of emitting a substantially coherent light at a predetermined wavelength along said active layer when made opertive by means of a current applied across said junction, the emission of the light from the device being from opposed facet surfaces thereof perpendicular to said active layer, a plurality of contiguous layers on at least one facet surface of said device characterized in that these layers comprise, as consecutively deposited, a low refractive index material, an intermediate refractive index material, and a high refractive index ablative material, the total thickness of said layers being substantially antireflective at said predetermined wavelength, said device, when operated, forms an aperture through said high index material, said low and intermediate materials having a total thickness at said aperture substantially reflective to said light at said predetermined wavelength.

4,280,108

TRANSVERSE JUNCTION ARRAY LASER

Donald R. Scifres, Los Altos; Robert D. Burnham, Los Altos Hills, and William Streifer, Palo Alto, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Jul. 12, 1979, Ser. No. 57,159
Int. Cl.³ H01S 3/19
U.S. Cl. 331—94.5 H **7 Claims**



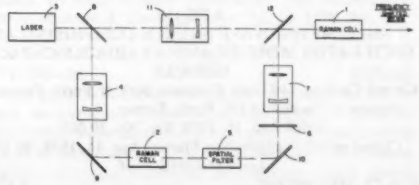
1. A solid state light emitting device comprising:
a semiconductor body including a plurality of active region layers;
each of said active region layers being sandwiched between semiconductor material having a bandgap higher than the bandgap of the material of that active region layer;
a rectifying junction within said semiconductor body, at least a portion of said rectifying junction traversing said active region layers;
resonator means for providing a plurality of optical resonant cavities each of which includes one of said active region layers; and
electrode means for the application of forward bias to said rectifying junction to provide pump current to said active region layers whereby, upon sufficient forward bias, each of said active region layers emits a light beam.

4,280,109

EFFICIENT FREQUENCY CONVERTER UTILIZING HIGHER ORDER STOKES-RAMAN SCATTERING

Eddy A. Stappaerts, Redondo Beach, Calif., assignor to Northrop Corporation, Los Angeles, Calif.

Filed Nov. 23, 1979, Ser. No. 96,750
Int. Cl.³ H01S 3/30
U.S. Cl. 331—94.5 N **5 Claims**



1. A device utilizing higher order Stokes-Raman scattering

for converting a beam of radiation from a laser into radiation at other wavelengths comprising:

(a) a gaseous Raman oscillator cell,

(b) a gaseous Raman amplifier cell,

(c) a laser which emits a beam of laser energy,

(d) a first beam splitter which splits the beam emitted by the laser into first and second parts, the first part being reflected by the first beam slitter and the second part passing through the first beam splitter,

(e) a first telescope oriented such that the first part of the laser beam passes through it after leaving the first beam splitter, which first telescope acts on the first part of the laser beam to reduce its cross section and thereby to concentrate the energy density of the first part of the laser beam,

(f) first reflecting means for reflecting radiation, oriented so as to direct the first part of the laser beam, after exiting from the first telescope, into the Raman oscillator cell, so as to pass through the Raman oscillator cell and so that any unconverted portion thereof exits from the Raman oscillator cell, the energy density of the first part of the laser beam being sufficiently concentrated by the first telescope such that its power density within the Raman oscillator cell exceeds the threshold necessary to initiate the generation of Stokes-Raman radiation of various Stokes orders, part of which radiation is emitted from the Raman oscillator cell, together with the unconverted portion of the first part of the laser beam,

(g) frequency filter means for transmitting only Stokes order radiation up to and including a selected order and for not transmitting Stokes-Raman radiation of higher orders than the selected order,

(h) a second reflecting means for reflecting radiation oriented so as to reflect the Stokes-Raman radiation emitted from the Raman oscillator cell into the frequency filter means,

(i) a second telescope oriented such that the filtered Stokes-Raman radiation transmitted by the frequency filter means passes through the second telescope,

(j) a second beam splitter which transmits the second part of the laser beam and reflects the Stokes-Raman radiation emitted from the second telescope so as to superimpose the Stokes-Raman waves upon the second part of the laser beam,

(k) said second telescope expanding the cross section of the Stokes-Raman radiation so as to reduce the energy density thereof and so as to cause the cross section thereof to be comparable to that of the second part of the laser beam after it has passed through the second beam splitter means,

(l) the laser, the second beam splitter and the Raman amplifier cell being so oriented so that the second part of the laser beam which is transmitted by the second beam splitter, together with the Stokes-Raman radiation reflected by the second beam splitter, both enter and traverse the Raman amplifier cell along approximately the same path,

(m) the length of the path through the Raman amplifier cell and the power densities of the second part of the laser beam and of the Stokes-Raman radiation entering the Raman amplifier cell being adjusted so as to concentrate most of the energy exiting from the Raman amplifier cell into one, higher order, Stokes-Raman beam of radiation.

4,280,110

MILLIMETER WAVE SOURCE COMPRISING AN OSCILLATOR MODULE AND A VARIABLE-CAPACITY MODULE

Gerard Cachier, and Jean Stevance, both of Paris, France, assignors to Thomson-CSF, Paris, France

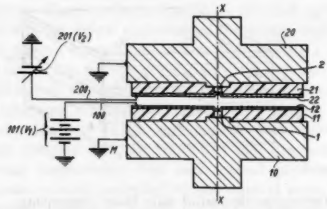
Filed Apr. 11, 1979, Ser. No. 29,045

Claims priority, application France, Apr. 14, 1978, 78 11059

Int. Cl.³ H03K *9/04*

U.S. Cl. 331—107 DP **5 Claims**

1. A millimeter wave source of the type comprising a first module formed by a first diode, a disc of solid dielectric surrounding the diode, a first electrode acting as support and a first metallization acting as biassing electrode, the source additionally comprising biassing means enabling the first diode to function as a diode having negative resistance at high frequencies, the source further comprising a second module formed by a second diode capable of functioning as a variable-capacity diode under predetermined biassing conditions, variable voltage means providing said biassing conditions to said second diode, a second metallization acting as a biassing electrode, said second diode facing said first the diode of the first module so as to form a capacitive coupling between said first and second metallizations, the source additionally comprising a conductive body acting as an electrical earth and as a mechanical support for both modules.



4,280,111

WAVEGUIDE CIRCULATOR HAVING COOLING MEANS

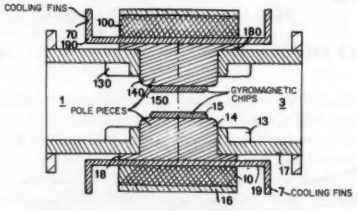
Gerard Forterre, and Jacques Berthe, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Dec. 10, 1979, Ser. No. 101,504

Claims priority, application France, Dec. 8, 1978, 78 34622

Int. Cl.³ H01P *1/39, 1/30*

U.S. Cl. 333—1.1 **6 Claims**

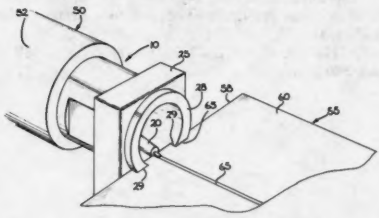


1. A three-gate power circulator on a Y wave-guide whose magnetic biasing circuit comprises soft iron pole pieces passing through the walls of the cavity joining said wave-guides whose ends plunging into said cavity are directly in contact with a gyromagnetic material chip, the improvement consisting in said pole pieces each passing, furthermore, through a metal matching block integral with the wall of the cavity, having a section between that of the gyromagnetic chips and that of said blocks and being in contact with a cooling device, said cooling device being formed by heat-conducting metal members brazed to shoulders of the pole pieces and whose periphery thereof is bent back to form fins which are cooled by natural convection.

4,280,112
ELECTRICAL COUPLER

Robert L. Eisenhart, 6180 Dalecrest Ave., Woodland Hills, Calif. 91364

Filed Feb. 21, 1979, Ser. No. 13,605
Int. Cl.[3] H01P *5/08, 1/04, 3/08*
U.S. Cl. 333—21 R 20 Claims



1. An electrical coupler for electrically connecting a coaxial transmission line to a microstrip transmission line comprising:

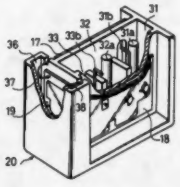
outer conductor means having first and second ends, said first end adapted for coupling to the outer conductor of said coaxial line, said second end adapted for coupling to a first conductor of such microstrip transmission line;

inner conductor means adapted for disposition within said outer conductor means, having first and second ends, said first end adapted for coupling to the inner conductor of said coaxial line, said second end disposed offset relative to the axis of said outer conductor of said microstrip transmission line, said inner conductor means gradually shifted off-center relative to said axis of said outer conductor means from said first end to said second end thereof.

4,280,113
FILTER FOR MICROWAVES

Mitsuo Sekiguchi, Soma, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Dec. 27, 1979, Ser. No. 107,526
Claims priority, application Japan, Dec. 28, 1978, 53/179706[U]
Int. Cl.[3] H01P *1/208, 7/06, 1/20*
U.S. Cl. 333—202 7 Claims



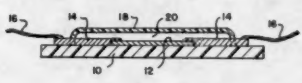
1. In a filter for signals in the microwave frequencies, comprising a plurality of resonator cavities separated by respective walls therebetween, each said cavity being formed of a housing and a respective resonance rod formed unitarily with said housing, means including windows formed in said walls for coupling said cavities together and coupling loops for transmitting said signals;

the improvement comprising the fact that at least one of said windows is formed in proximity to top end portions of the resonance rods and that a portion of one of said coupling loops is substantially coplanar with said window.

4,280,114
DISCONTINUOUS METAL AND CERMET FILM RESISTORS AND STRAIN GAUGES

Robert M. DelVecchio, Vandergrift, and Zvi H. Meiksin, Pittsburgh, both of Pa., assignors to University of Pittsburgh, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 78,486, Sep. 24, 1979, Pat. No. 4,231,011. This application Apr. 14, 1980, Ser. No. 140,133
The portion of the term of this patent subsequent to Oct. 28, 1997, has been disclaimed.
Int. Cl.[3] G01L *1/22*
U.S. Cl. 338—2 5 Claims



1. A strain gauge comprising:

a. a substrate composed of nonconductive material,

b. a cermet film on the substrate,

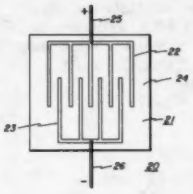
c. a plurality of electrodes attached to the cermet film, and

d. means for maintaining an environment having a constant humidity in the range of 15% to 45% about the discontinuous metal film.

4,280,115
HUMIDITY SENSOR

Gregory C. Farrington, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 878,924, Feb. 17, 1978, abandoned. This application Jun. 18, 1979, Ser. No. 49,222
Int. Cl.[3] H01L *7/00*
U.S. Cl. 338—35 7 Claims



1. A humidity sensor responsive to changes in atmospheric water content by changes in sensor impedance which consists essentially of a nonporous, water impervious ionic-conductive beta-alumina substrate, at least a pair of spaced apart, thin electrodes mounted on at least one major surface of the substrate, and an electrical lead in contact with each of the electrodes.

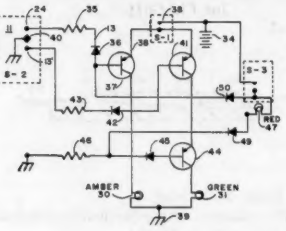
4,280,116
DECELERATION ALERT SYSTEM

Richard H. Camp, P.O. Box 62, Haines, Oreg. 97833

Continuation-in-part of Ser. No. 567,162, Apr. 11, 1975, abandoned, and a continuation-in-part of Ser. No. 742,663, Nov. 11, 1976, abandoned. This application Jul. 12, 1978, Ser. No. 923,957
Int. Cl.[3] B60Q *1/26*
U.S. Cl. 340—66 5 Claims

3. In a deceleration alert system for vehicles operable to indicate acceleration, deceleration and braking operating modes of vehicle operation, the combination of a double acting switch and a signal indicating circuit comprising a first transistor having an emitter connected to a positive power source through an ignition switch of an automotive vehicle, a base of said first transistor being connected to chassis ground through

a first semi-conductor diode connected to a first of two contact terminals of said double acting switch, a collector of said first transistor being connected to one terminal of an indicating lamp having its opposite terminal connected to chassis ground, a second transistor having an emitter connected to a positive power source through an ignition switch, a base of said second transistor being connected to chassis ground through a second semi-conductor diode connected to the second of the two



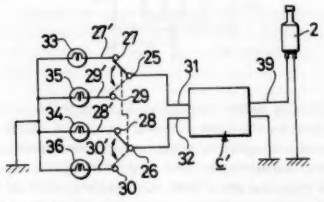
contact terminals of said double acting switch, a collector of said second transistor being connected to one terminal of a second indicating lamp having an opposite terminal connected to chassis ground, a brake switch connected to a positive power source and having a contact connected to one terminal of a third lamp and to the base of the first transistor through a third semi-conductor diode, an opposite terminal of said third lamp being connected to chassis ground.

4,280,117

DIRECTION INDICATION APPARATUS FOR VEHICLES

Yoshikatsu Furusawa, No. 19, Aza Uwamichi, Kemanai, Towada-machi, Kazuno-shi Akita-ken, Japan

Filed Jul. 6, 1979, Ser. No. 55,168
Claims priority, application Japan, Aug. 11, 1978, 53-111084
Int. Cl.³ B60Q *1/26*
U.S. Cl. 340—81 R **17 Claims**



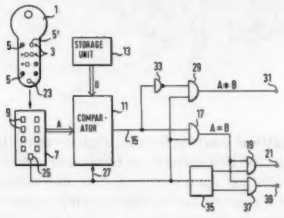
1. Direction indication apparatus for a vehicle comprising a power generation unit containing a miniature electric power generator arranged so as to permit a rotor thereof to optionally engage or disengage with the tire of said vehicle, such as bicycle, by the drawing operation of a Bowden wire, an electric flasher system causing alternate flickering of direction indication signal lamps disposed suitably on both sides in front and rear of said vehicle so as to cause flickering to alternate between the front and rear signal lamps and a manipulation means for performing direction indication operation which has a mechanism simultaneously effecting the operation of said power generation unit and junction of contacts connected to either one side of said signal lamps in such a manner that, by moving a manipulation knob forward or backward along a T-shaped cut-off slit, engagement of said power generator with the tire is effected and by further tipping said manipulation knob on either one side or the other, switching to said signal lamps on the corresponding side of the vehicle is effected.

4,280,118

KEY-CONTROLLED ELECTROMAGNETIC OPERATING MECHANISM FOR A LOCK AND THE LIKE

Gerd Brunken, Dittelbrunn; Volker Eibl, Munich, and Hans Fliege, Obertheres, all of Fed. Rep. of Germany, assignors to Sachs-Systemtechnik GmbH, Schweinfurt, Fed. Rep. of Germany

Continuation of Ser. No. 963,275, Nov. 24, 1978, abandoned. This application Dec. 14, 1979, Ser. No. 103,728
Claims priority, application Fed. Rep. of Germany, Nov. 30, 1977, 2753381
Int. Cl.³ H04Q *3/00*; E05B *47/00*; H01H *27/00*; G08B *13/08*
U.S. Cl. 340—147 MD **12 Claims**



1. A key-controlled, electromagnetic operating mechanism for a lock and the like comprising:

(a) a key including

(1) a key body,

(2) securing means for releasably securing respective magnets to portions of said key body, said portions defining a fixed pattern of available magnet positions on said key body;

(b) a plurality of magnets secured to said key body by said securing means in selected ones of said positions, at least one other position being free of a magnet;

(c) a reading device including

(1) a reader body,

(2) guide means for guiding said key body into a predetermined position relative to said reader body;

(d) a plurality of sensing means on said reader body,

(1) said sensing means being contiguously adjacent respective available magnet positions on said key body when said key body is in said predetermined position,

(2) each sensing means responding to the presence of a magnet in the adjacent magnet position for generating an electrical signal;

(e) a source of a reference signal;

(f) comparator means operatively connected to said sensing means and to said source for comparing the electrical signals generated by said sensing means with said reference signal and for generating an operating signal in response to agreement of said electrical signals with said reference signal.

4,280,119

ULTRASONIC AND CAPACITIVE ELECTRONIC KEY SYSTEMS

George A. May, R.R. 1 E. Sooke Rd., Sooke, Canada (VOS1NO)

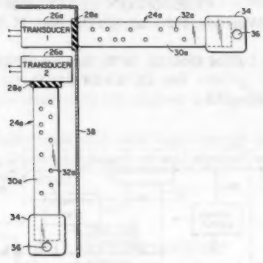
Division of Ser. No. 947,596, Oct. 2, 1978. This application Nov. 26, 1979, Ser. No. 97,163
Int. Cl.³ H04Q *9/00*; G08B *13/16*
U.S. Cl. 340—147 MD **6 Claims**

1. An electronic key system for use with a locking device comprising

key means having a preselected pattern of impedance to an

ultrasonic pulse propagated therethrough for reflecting an applied ultrasonic pulse in a preselected pattern,

means for generating and sensing ultrasonic pulses, and



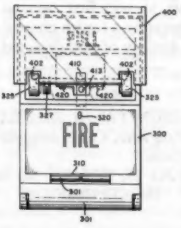
means for coupling said generating and sensing means to said key means when said key means is located in juxtaposition to said coupling means.

4,280,120

FIRE ALARM SIGNAL STATION

Larry F. Trafford, and John W. K. Thompson, both of Owen Sound, Canada, assignors to General Signal Corporation, Stamford, Conn.

Filed Apr. 18, 1980, Ser. No. 141,494
Int. Cl.³ G08B *25/00*
U.S. Cl. 340—303 **50 Claims**



1. A unitary base for a fire alarm box to be equipped with a break-rod and comprising in combination:

(a) a base fabricated of a material capable of at least some yield, without fracture, in response to an applied force;

(b) said base including first and second break-rod support posts with each break-rod support post having an associated rod pocket;

(c) said base including, as integral members thereof, first and second break-rod containment springs juxtaposed proximate to said rod pockets of said first and second posts, respectively, for retaining a break-rod in a predetermined position after it has been positioned in said rod pockets; and wherein

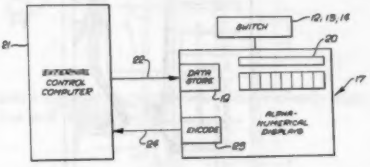
(d) said first and second rod pockets and the respective associated break-rod containment springs are contoured and positioned in cooperative relationship with each other and an associated break-rod for permitting at least some movement of the break-rod in one direction from said predetermined position and for inhibiting movement from said predetermined position in a direction opposite to said one direction.

4,280,121

KEYBOARD ASSEMBLY WITH CONTROLLABLE KEY LEGENDS

Geoffrey J. Crask, 3010 S. Pacific Ave., Santa Ana, Calif. 92704

Filed Jun. 5, 1978, Ser. No. 912,260
Int. Cl.³ G06F *3/02*; G06G *3/00*
U.S. Cl. 340—365 VL **7 Claims**



1. In an interactive keyboard and display assembly, the combination of

(a) a mounting structure comprising a first rigid sheet of transparent, insulative material, the sheet having front and rear sides,

(b) a planar array of transparent switches on said sheet, each switch comprising first, second and third parallel, electrically conductive and transparent layers, the first layer located at the front side of the sheet, the second and third layers located at the rear side of the sheet and being everywhere separated from the first layer by the material of the first sheet, the first layer overlapping the second and third layers, there being space between said second and third layers, said three layers defining an adjacent pair of capacitors forming a touch sensitive switch,

(c) rigid sheet means extending at the rear side of the first sheet,

(d) alphanumeric display devices carried by the rigid means in relatively closely spaced opposed relation to said respective switches, and characterized in that each device is in registration with multiple of said layers of a single switch and also in registration with and closely adjacent said space between the second and third layers, whereby said devices are visible through said switch layers, said space and the first sheet, and

(e) multiple data storage devices, at least one for each display device, mounted on said rigid sheet means.

4,280,122

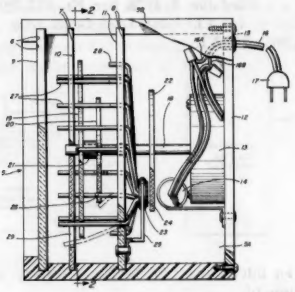
OPTICAL FIBERS

Ronald R. McKinley, Lawrence; Robert E. Hamel, Jr., Amesbury, and Bernard J. Dolan, Stoneham, all of Mass., assignors to Dolan-Jenner Industries, Inc., Woburn, Mass.

Filed Jun. 30, 1980, Ser. No. 164,835
Int. Cl.³ G08B *5/00*; G09F *19/12*; F21V *7/04*
U.S. Cl. 340—380 **13 Claims**

1. A device for displaying the lit ends of optical fibers, said device including a box provided with a transverse partition dividing the box into front and rear sections, the front of the box a window of one way sheet material, optical fibers extending through said partition with their ends in the front section free, resilient, parallel and at right angles to said window and their ends in the rear section in the form of a bundle, means in said rear section operable to direct light against the bundled ends of the fibers, and means in the front section of the box

operable to effect the displacement of and the return of the free ends of at least some of the fibers thereby to produce the effect,



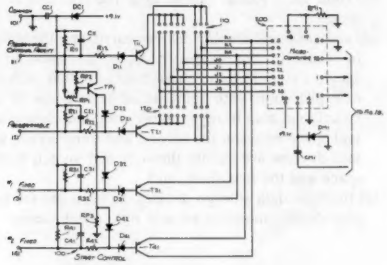
when the lit free ends of the fibers are viewed through the window, of pin points of light moving in space.

4,280,123

MULTITONE SIGNALING DEVICE

Robert W. Right, Huntington, Conn.; Herbert W. McCord, Warren, N.J., and Vaclav O. Podany, Holyoke, Mass., assignors to General Signal Corporation, Stamford, Conn.

Filed May 5, 1980, Ser. No. 146,913
Int. Cl.³ G08B *3/00*
U.S. Cl. 340—384 E **24 Claims**



1. A multiple tone programmable speaker comprising in combinaton:

(a) a microcomputer having a plurality of input control terminals for selectively controlling the production of any one of N unique output signals on a plurality of output terminals in response to the coupling together of the leads of a predetermined one of N predetermined unique combinations of said plurality of input control terminals;

(b) a system power supply;

(c) a speaker;

(d) an audio amplifier coupled between said speaker and said output terminals of said microcomputer for amplifying said one of said N unique output signals and applying the amplified signal to said speaker;

(e) start control means including not more than N, start control terminals coupled by first coupling means to at least selected ones of said plurality of input control terminals;

(f) circuit means interconnecting said system power supply, said microcomputer, said audio amplifier and said start control means; and wherein

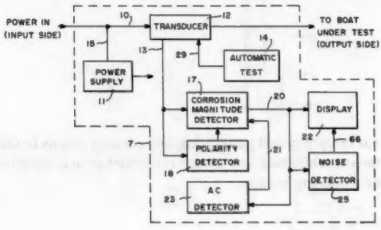
(g) said first coupling means includes means for coupling together the leads of one of said N predetermined unique combinations of said plurality of input control terminals in response to coupling a predetermined potential to one of said start control terminals.

4,280,124

CORROSION DETECTOR

James W. Wuertele, 155 Acalanes Dr., Apt. 27, Sunnyvale, Calif. 94086

Filed Oct. 12, 1978, Ser. No. 950,663
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—650 **10 Claims**



1. A maritime corrosion detector comprising:

transducer means for detecting leakage electrical current in a conductor connected to one or more boats and for generating a first control signal representing the occurrence, level and polarized condition of said detected leakage current,

means responsive to said first control signal for generating a second control signal representing whether said leakage current is AC or DC leakage current,

means responsive to said first control signal for generating a third control signal corresponding to the polarized condition of said DC leakage current, and

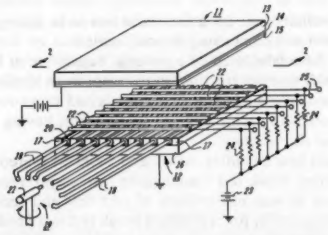
means responsive to said first, second and third control signals for generating a fourth control signal representing the corrosive activity of said detected leakage current.

4,280,125

THIN VACUUM PANEL DISPLAY DEVICE

Benjamin Kazan, Palo Alto, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Jul. 27, 1979, Ser. No. 61,349
Int. Cl.³ G06F *3/14*
U.S. Cl. 340—795 **10 Claims**



1. A vacuum panel display device including a viewing wall having thereon a phosphor layer on which information is displayed in response to electron beam excitation, the improvement comprising:

an electron source wall spaced from and parallel to said viewing wall,

a generally planar array of parallel, elongate optical waveguide elements supported upon said electron source wall,

a portion of each waveguide element bearing a coating of photoemissive material along its length

a light energy source coupled to each of said waveguide elements for selectively introducing light into and along the length of each of said selected waveguide elements to cause photoemission of electrons from said coating along the length of said selectively illuminated waveguide elements,

means for controlling the flow of electrons to said phosphor layer from preselected areas of said coating along the length of each selectively illuminated waveguide element and

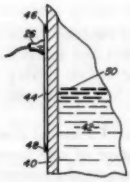
timng means associated with said light energy source for sequentially illuminating each of said optical waveguide elements in said array.

4,280,126

LIQUID LEVEL DETECTOR

Kenneth T. White, Chicago Heights, Ill., assignor to Chemetron Corporation, Chicago, Ill.

Filed May 14, 1979, Ser. No. 39,047
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—621 **10 Claims**



1. An apparatus for locating the level of interface of two fluids in a closed metallic container having curvilinear walls with a thickness of from ¼ to ¾ inch comprising:

a manually portable transducer having a piezoelectric material for transmitting and receiving sonic signals,

a sonic pulse generator capable of exciting the piezoelectric material to emit sonic waves into the container wall from a location adjacent the outside surface of the container wall at a frequency within about 20% of the natural resonant frequency of the container wall,

means for determining that the reception of the sonic signals transmitted into the container wall is above a minimum preselected amplitude when the transducer is at a location above the interface of the fluids within the container, and

means for determining the vertical location at which the reception of sonic signals transmitted into the container wall is below the minimum preselected amplitude as the transducer is manually moved toward the interface of the fluids.

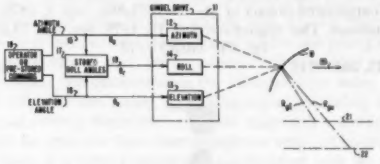
4,280,127

RANGE SWATH COVERAGE METHOD FOR SYNTHETIC APERTURE RADAR

Henry E. Lee, Columbia; Francisco J. Guillen, and R. Noel Longuemare, Jr., both of Ellicott City, all of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 25, 1979, Ser. No. 60,514
Int. Cl.³ G01S *13/90*
U.S. Cl. 343—5 CM **2 Claims**

1. A method of increasing the range swath coverage in an airborne synthetic aperture radar antenna that is operated by a gimbal drive mechanism to position the antenna about axes in elevation and azimuth and to position the antenna about a roll axis that is orthogonal to both the elevation and azimuth axes, said antenna being configured to project a beam that changes the area of illumination in accordance with its angular position about the roll axis, comprising positioning the antenna about



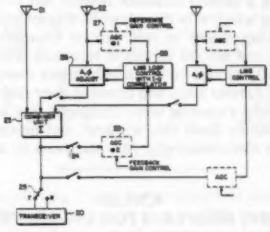
the roll axis a selected angle effective to more closely align the isogain line and the isodop line.

4,280,128

ADAPTIVE STEERABLE NULL ANTENNA PROCESSOR

Raymond J. Masak, East Northport, N.Y., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 24, 1980, Ser. No. 132,941
Int. Cl.³ G01S *3/06*
U.S. Cl. 343—100 LE **9 Claims**



1. A steerable null antenna processor system for receiving desired wave energy signals from at least one angular region of space within the area covered by the system and for suppressing interfering signals from at least one other angular region comprising:

antenna means having at least first and second antenna elements;

antenna signal path means including combining means coupled between said antenna elements and a common port for supplying said desired wave energy signals to said common port;

nulling means comprising phase means and amplitude means forming part of said antenna signal path means, both the phase means and the amplitude means being adjustable in incremental steps and having control inputs, operative in response to digital control inputs to adjust the phase and amplitude values of the nulling means;

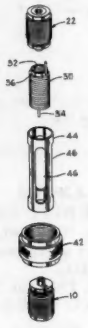
analog controller means having correlator means, at least one reference input and at least one feedback input from said antenna signal path means, said analog controller means being operative to generate analog phase and amplitude control signals, converter means to change the last said signals to digital control signals and to supply them to said control inputs of the nulling means, to thereby steer at least one null to interfering signals;

said correlator means comprising an in phase hybrid and a quadrature hybrid with inputs coupled to said feedback and reference inputs, two mixers connected to multiply together outputs from said hybrids, and integration means to generate said analog phase and amplitude control signals.

4,280,129
VARIABLE MUTUAL TRANSDUCTANCE TUNED ANTENNA

Donald H. Wells, 7127 Kipling, Holland, Ohio 43528

Continuation-in-part of Ser. No. 831,880, Sep. 9, 1978, abandoned. This application Sep. 10, 1979, Ser. No. 73,695
Int. Cl.³ H01Q *1/32*
U.S. Cl. 343—715 **19 Claims**

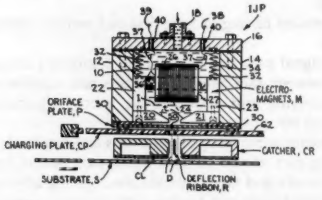


1. A tuning device comprising: a generally tubular metallic body having a central chamber therein and with a magnetic flux escaping window in the sidewalls thereof, electromagnetic flux producing means in said central chamber, said means having first and second electrical terminals which communicate externally of said body, an inductance tuning loop externally of said tubular body and crossing over said window, said loop producing a counter electromagnetic flux which opposes the flux escaping from said window, and means for varying said counter electromagnetic flux produced by said loop.

4,280,130
FORMING DROPLETS FOR INK JET PRINTING

Arthur J. Slemmons, 19655 Redberry Dr., Los Gatos, Calif. 95030

Filed Nov. 13, 1979, Ser. No. 98,902
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—75 **21 Claims**

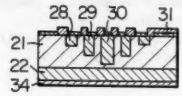


1. Printing head apparatus for producing a jet of small droplets of printing ink, said apparatus being of the type comprising an ink reservoir, means for forming at least one small diameter orifice for said reservoir, means for supplying electrically conductive ink to said reservoir under pressure for forcing an ink stream through each orifice, and electro-magnetic means including opposed pole pieces straddling each orifice for applying a magnetic field to the flowing ink at each orifice; the improvement wherein said ink has a low magnetic susceptibility and said pole pieces are disposed in close proximity to one end of each orifice, means for periodically energizing said electromagnetic means at a high frequency for creating periodically generated eddy currents in said flowing ink at each orifice which eddy currents provide periodic flowing ink retarding forces for perturbing the ink stream emitting from each orifice to stimulate stream ink stream break up into uniformly spaced discrete droplets at a uniform distance from the orifice forming means, said magnetic pole pieces being the sole means for providing electrically generated energy to the flowing ink at said orifice forming means for perturbing the ink stream.

4,280,131
PLEOCHROIC LIGHT EMITTING DIODE AND METHOD OF FABRICATING THE SAME

Yuichi Ono; Kazuhiro Ito, both of Tokyo; Mitsuhiro Mori; Masaaki Aoki, both of Kokubunji, and Kazuhiro Kurata, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 7, 1979, Ser. No. 18,330
Claims priority, application Japan, Mar. 17, 1978, 53-29958
Int. Cl.³ H01L *33/00*
U.S. Cl. 357—17 **7 Claims**

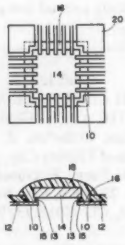


1. A pleochroic light emitting diode comprising:
a mixed crystal compound semiconductor layer of a first conductivity type whose mixing ratio is continuously varied in the direction of thickness from a planar surface of said layer; and
a plurality of regions of a second conductivity type formed in said planar surface of said compound semiconductor layer with different depths respectively relative to said planar surface to form p-n junctions with said compound semiconductor layers,
whereby plural light emissions with different center wavelengths generated at said p-n junctions are derived from said planar surface of said compound semiconductor layer.

4,280,132
MULTI-LEAD FRAME MEMBER WITH MEANS FOR LIMITING MOLD SPREAD

Masao Hayakawa, Kyoto; Takamichi Maeda, Yamatokoriyama, and Masao Kumura, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 872,314, Jan. 25, 1978. This application Oct. 15, 1979, Ser. No. 84,542
Claims priority, application Japan, Jan. 25, 1977, 52-7972
Int. Cl.³ H01L *23/48, 29/44, 29/60*
U.S. Cl. 357—70 **6 Claims**



1. A multiple-lead frame member comprising a semiconductor unit disposed within an aperture, a plurality of metallic lead connectors bonded to said semiconductor unit by bump means, and blocking means provided for limiting mold spread when

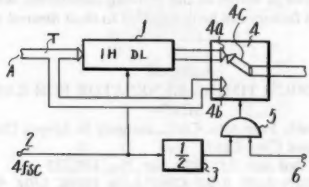
the semiconductor unit is molded, said blocking means being positioned at at least one corner of said aperture and being composed of a metallic material common to said leads, wherein the semiconductor unit is disposed in a predetermined pattern extending cantileverwise inwardly, beyond the periphery of the aperture.

4,280,133

VIDEO SIGNAL PROCESSING CIRCUIT

Tetsuro Kato, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Nov. 13, 1979, Ser. No. 93,852
Claims priority, application Japan, Nov. 14, 1978, 53-140017
Int. Cl.³ H04N *5/783*
U.S. Cl. 358—8 **19 Claims**



1. A video signal processing circuit for processing a video signal comprised of field intervals each having a plurality of line intervals, said processing circuit comprising:

a video signal input for said video signal;

delay means connected with said input for delaying said video signal for a duration of a predetermined number of said line intervals, thereby providing a delayed version of said video signal;

switching means connected with said input and said delay means for alternately applying said video signal and said delayed version thereof to an output terminal of the processing circuit; and

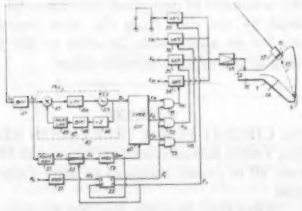
means for causing said switching means to switch at a sampling rate sufficient to supply samples of said video signal and the delayed version thereof a plurality of times during each said line interval.

4,280,134

BEAM INDEX COLOR TELEVISION RECEIVER APPARATUS

Akira Tooyama, Tokyo; Takashi Tooyama, Kokubunji, and Takashi Hosono, Yokohama, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jul. 3, 1979, Ser. No. 54,490
Claims priority, application Japan, Jul. 5, 1978, 53-81787
Int. Cl.³ H04N *9/24*
U.S. Cl. 358—67 **11 Claims**



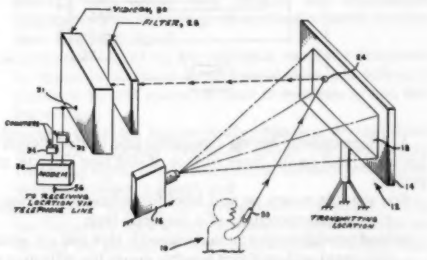
1. Apparatus for controlling the electron beam in a beam index color television receiver of the type having a cathode ray tube whose display screen is provided with beam-excitable color elements and index elements which are scanned by said beam, said apparatus comprising index signal generating means for generating a periodic index signal as said index elements are scanned by said beam; color gate means for sequentially gating respective color control signals individually to modulate said electron beam as said beam scans said color elements; gating signal generating means for generating sequential gating signals at a frequency synchronized with the frequency of said periodic index signal, said gating signals being supplied in sequence to said color gate means to control the latter to gate said respective color control signals; and driving means responsive to said periodic index signal to drive said gating signal generating means, said driving means including time adjustment means for compensating the inherent time delay of at least said color gate means, said gating signal generating means and said driving means such that said respective color control signals are gated in time correspondence with the position of said beam at a color element that is associated with the gated color control signal.

4,280,135

REMOTE POINTING SYSTEM

Howard R. Schlossberg, 4811 Hercules Ct., Annandale, Va. 22003

Filed Jun. 1, 1979, Ser. No. 44,813
Int. Cl.³ H04N *7/18*
U.S. Cl. 358—93 **9 Claims**

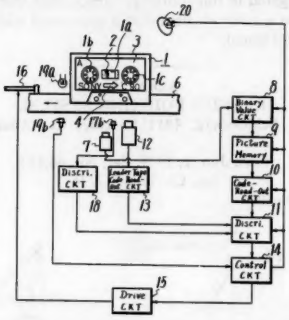


1. A remote pointing system comprising first means situated at a preselected location for emitting a visible beam of radiant energy of preselected wavelength, first means having a preselected configuration located adjacent said first beam emitting means for displaying thereon said visible beam of radiant energy and allowing further transmission of said visible beam of radiant energy, means in optical alignment with said beam of radiant energy transmitted from said first display means for receiving only said preselected wavelength of said beam of radiant energy and transmitting a signal capable of transmission over a telephone line corresponding to the position of said beam of radiant energy on said first display means, said receiving and telephone line transmission signal transmitting means including a video camera in optical alignment with said beam of radiant energy transmitted from said first display means and means operably connected to said video camera for converting a signal emanating from said video camera into said signal capable of transmission over said telephone line, means situated at a location other than said preselected location for receiving said telephone line transmission signal corresponding to the position of said beam of radiant energy on said first display means and transmitting a signal in accordance therewith, second means situated at said other location for emitting a visible beam of radiant energy, second means having a preselected configuration located adjacent said second beam emitting means for displaying said visible beam of radiant energy emitted therefrom, means operably connected to said position signal receiving and transmitting means at said other location for directing said beam of radiation emitted from said second beam emitting means onto said second display means in accordance with said position signal whereby the position of said beam of radiant energy on said second display means corresponds to the position of said beam of radiant energy on said first display means.

4,280,136
TAPE CASSETTE AND LABEL INSPECTION SYSTEM THEREFOR

Tsunehiro Kashima, Tokyo; Shunsuke Sakoda, Yokohama; Hidetoshi Tsuda, Sendai; Tamihei Hiramatsu, Chigasaki, and Kazuyuki Morita, Ebina, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Oct. 11, 1979, Ser. No. 83,859
Claims priority, application Japan, Oct. 13, 1978, 53-126531
Int. Cl.[3] G11B *23/04;* H04N *7/18*
U.S. Cl. 358—93 16 Claims



1. A tape cassette having a magnetic tape loaded therein and having a label on the outer surface of said tape cassette, comprising:

first sensible means on said label for indicating at least one physical characteristic of a magnetic tape;

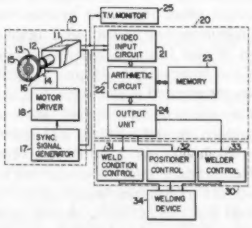
second sensible means on said magnetic tape and not visually associated with said first sensible means for indicating said at least one characteristic of said magnetic tape; and

wherein said at least one characteristic indicated on said label is adapted to be compared with said at least one characteristic indicated on said magnetic tape to determine whether said first sensible means on said label correctly indicates said at least one characteristic of said magnetic tape.

4,280,137
METHOD AND APPARATUS FOR AUTOMATICALLY CONTROLLING ARC WELDING

Eiji Ashida; Masayasu Nihei; Hiroshi Wachi, all of Hitachi; Akira Sato, Takahagi, and Satoshi Kokura, Hitachiota, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 22, 1979, Ser. No. 5,075
Claims priority, application Japan, Jan. 25, 1978, 53-6229
Int. Cl.[3] H04N *7/18*
U.S. Cl. 358—101 12 Claims



1. A method for automatically controlling arc welding comprising the steps of:

alternately picking up, by optical means, pieces of optical information provided by at least two bands of different wavelengths of light radiated from a weld area being arc-welded under predetermined welding conditions;

extracting the weld factors representing the actual steps of the weld area from said optical information, with said weld factors including at least one of the shape of the groove, the physical position of the weld torch, the height of the lower end of the weld torch from the molten pool, the shape of the molten pool, and the shape of the arc;

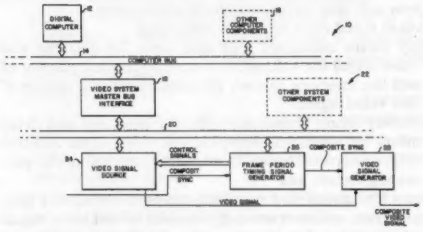
comparing said extracted weld factors representing the actual status of the weld area with the desired values of the weld factors representing the desired status of the weld area so as to compute the error or errors of the welding conditions; and

correcting the welding conditions on the basis of said detected error or errors of the welding conditions, whereby said weld factors can be controlled to their desired values.

4,280,138
FRAME PERIOD TIMING GENERATOR FOR RASTER SCAN

Rodney D. Stock, Palo Alto, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Apr. 11, 1980, Ser. No. 139,332
Int. Cl.[3] H04N *5/06, 9/46;* G06F *1/04;* H03K *5/04, 5/13*
U.S. Cl. 358—150 16 Claims



1. A high speed timing signal generator comprising:

an addressable, readable data store having a plurality of data outputs indicating data stored at corresponding bit positions of state defining addressed word locations, the data outputs including a plurality of timing signals and a plurality of state duration control outputs;

a clock signal source providing an elemental clock signal; and

address control circuitry coupled to receive the elemental clock signal and data from the state duration control outputs and address the readable store in response thereto to cause the timing signal generator to remain at a given state for a number of periods of the elemental clock signal indicated by the data from the state duration control outputs for an addressable location in the store corresponding to the prior address location.

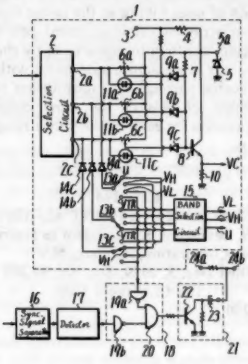
4,280,139
MUTING CIRCUIT FOR A TELEVISION RECEIVER

Takao Mogi; Yoshio Ishigaki, both of Tokyo, and Hisao Okada, Yokohama, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Oct. 10, 1979, Ser. No. 83,415
Claims priority, application Japan, Oct. 12, 1978, 53-140166
Int. Cl.[3] H04N *5/60*
U.S. Cl. 358—165 4 Claims

1. Apparatus for muting signals transmitted over a relatively low frequency transmission path in a television receiver of the type having channel selector means for producing a channel select signal to select a corresponding one of a plurality of presettable channels and tuning means responsive to said channel select signal to tune said television receiver to said corre-

sponding channel, said apparatus comprising means for providing a predetermined channel select signal when a predetermined channel is selected; detecting means for producing an output signal when the presence of a video signal at said television receiver is detected irrespective of the particular channel to which said television receiver is tuned; muting signal generating means conditioned when said predetermined channel select signal is provided so as to respond to the absence of said output signal to produce a muting signal; and a muting circuit coupled to said relatively low frequency transmission path and operative in response to said muting signal to attenuate the signals transmitted thereover.

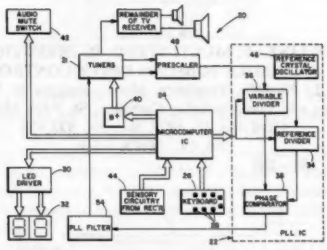


4,280,140

MICROCOMPUTER-CONTROLLED ONE-STEP-BACK AUTOMATIC FREQUENCY CONTROL TUNING SYSTEM

Peter C. Skerlos, Arlington Heights, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Feb. 19, 1980, Ser. No. 107,732
Int. Cl.³ H04N 5/44; H04B 1/26
U.S. Cl. 358—195.1 **10 Claims**



1. A method for tuning a television receiver having automatic frequency control to the carrier frequency of a selected broadcast channel with an associated channel number including generating a variable frequency signal by means of a local oscillator, generating a reference frequency signal by means of a reference oscillator, and generating a local oscillator correction signal for matching an intermediate frequency signal derived from said local oscillator signal and the carrier frequency signal with a predetermined nominal intermediate frequency signal, said method being characterized by the use of a microcomputer and comprising:

generating binary signals representing first and second digital tune words, said digital tune words representing a selected channel;

storing said first and second digital tune words in a first data memory in said microcomputer;

reading said first and second digital tune words from said first memory and generating a divided-down local oscillator frequency by the use of said first digital tune word and a divided-down reference oscillator frequency by the use of said second digital tune word;

comparing said divided-down local oscillator and reference frequencies and generating a control signal representative of the difference in frequency of said divided-down local oscillator and reference frequencies;

coupling said control signal to said local oscillator for causing it to be locked to the frequency of said received carrier signal;

mixing the local oscillator frequency signal and the carrier frequency signal to generate an intermediate frequency signal;

comparing said intermediate frequency signal with said predetermined nominal intermediate frequency signal and providing a tuning voltage to said microcomputer, said tuning voltage being indicative of the magnitude and direction of a tuning error between said intermediate frequency signal and said predetermined nominal intermediate frequency signal;

incrementally adjusting the reference oscillator frequency by means of a tuning signal provided to said reference oscillator by said microcomputer in response to said tuning voltage;

detecting when the incrementally changing, divided-down reference oscillator frequency causes the intermediate frequency signal to pass said predetermined nominal intermediate frequency signal; and

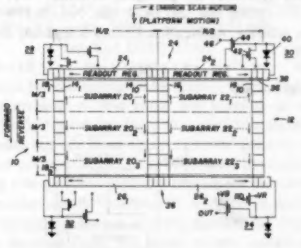
incrementally stepping the divided-down reference oscillator frequency back a predetermined number of steps following the passage of said predetermined nominal intermediate frequency signal by said intermediate frequency signal in tuning said television receiver to the selected channel.

4,280,141

TIME DELAY AND INTEGRATION DETECTORS USING CHARGE TRANSFER DEVICES

David H McCann, Ellicott; Marvin H. White, Columbia; Alfred P. Turly, Glen Burnie, all of Md., and Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of David H. McCann, Marvin H. White, Alfred P. Turly

Filed Sep. 22, 1978, Ser. No. 945,043
Int. Cl.³ H04N 3/15, 7/18
U.S. Cl. 358—213 **18 Claims**



18. A charge transfer imaging system comprising in combination:

a matrix of interconnected plural photosensitive charge transfer elements having plural charge signal channels along one direction of the matrix, each channel being comprised of a plurality of elements;

control means for controlling the translation of charge signals in different portions of the respective channels bidirectionally within said matrix and where the direction of charge flow in each element comprising each channel may be selectively reversed; and

means for operating said system in a variable time delay and integration mode by selecting and varying the number of said elements whose charge is to be summed.

4,280,142

OPTICAL REPRODUCING DEVICE FOR A SUPER-8 FILM READER

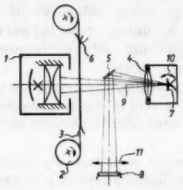
Otto Stemme, Munich; Eduard Wagensonner, Aschheim, and Wolfgang Ruf, Munich, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Filed Dec. 17, 1979, Ser. No. 104,161

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1978, 2855799

Int. Cl.³ H04N *3/36*

U.S. Cl. 358—214 **7 Claims**



1. An optical reproduction device for a Super-8 film scanner to reproduce the film images on a television screen, comprising means for advancing a film in a plane; a light source at one side of said plane; an image-reproducing lens at the other side of said plane and positioned on the optical axis of the light source so that light passing through the film enters and passes through the lens; a tilt mirror arranged beyond but adjacent to said lens so as to reflect the light rays leaving the lens, back through the same; and a fixed mirror between said lens and film advancing means, said fixed mirror being positioned to intercept light rays reflected back through the lens by said tilt mirror and to reflect them to a device for converting the light rays into electrical signals.

4,280,143

METHOD AND MEANS FOR SCALE-CHANGING AN ARRAY OF BOOLEAN CODED POINTS

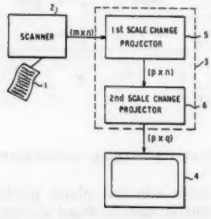
Ian D. Judd, Chandlers Ford, England, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 28, 1979, Ser. No. 79,779

Claims priority, application United Kingdom, Dec. 15, 1978, 48628/78

Int. Cl.³ H04N *1/00, 1/04*

U.S. Cl. 358—260 **3 Claims**



1. A method for the lossy compression of an mxn array of Boolean coded pels (black/white) into a smaller pxq array of Boolean coded pels, the method steps comprise:

forming a pxn array of Boolean coded pels from the mxn array, p being less than or equal to m, by encoding each ith vector in row major order with reference to the ith-1 vector through the substitution of a predetermined number of pels of the same color value in a weighted position for each run of pels, i lying in the range from 1 to n; and

forming a pxq array of Boolean coded pels from the pxn array, q being less than or equal to n, by the encoding of each rth vector in column major order with reference to the rth-1 vector through the substitution of a predetermined number of pels of the same color value in a weighted position for each run of pels, r lying in the range from 1 to p.

4,280,144

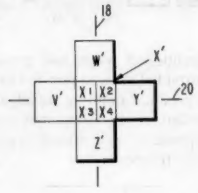
COARSE SCAN/FINE PRINT ALGORITHM

James L. Bacon, Lexington, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 3, 1979, Ser. No. 99,370

Int. Cl.³ H04N *1/40*

U.S. Cl. 358—280 **16 Claims**



1. Image processing device for transforming coarse scan information into fine scan information comprising:

means for encoding the coarse scan information into grey level information;

logic means for combining the grey level information from a coarse PEL of interest and its adjoining surrounding coarse PELs; and

conversion means operable to convert a combined grey level information into a fine PEL of black/white information.

4,280,145

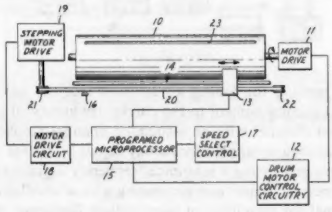
NON-LINEAR, MULTI-SPEED, BI-DIRECTIONAL FACSIMILE SUBSCAN DRIVE CONTROL

Donald L. Norrell, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sep. 15, 1977, Ser. No. 833,473

Int. Cl.³ H04N *1/06*

U.S. Cl. 358—289 **6 Claims**



1. A bi-directional, multi-speed, facsimile subscan drive control for the scan head of a drum-type facsimile machine which provides a scan operation by rotation of the drum with movement of the scan head axially of the drum including:

a single stepping motor drive having a rated operating frequency;

means for selectively and continuously providing forward control signals during a scan operation at any one of a plurality of frequencies all of which are less than said rated frequency and providing reverse control signals upon completion of a scan operation at a frequency that is higher than any of the forward control signals;

a motor drive circuit connected to said means for receiving said control signals and in response thereto providing motor drive stepping signals with said stepping motor drive connected to said motor drive circuit for receiving said motor drive stepping signals to step said motor drive; and

means operatively connecting said motor drive to the scan head of the facsimile machine for moving the scan head in response to operation of said motor drive whereby a helical stepped scan is produced when said forward control signals are provided and said scan head is moved toward its starting position when said reverse control signals are provided and wherein said forward control signals at any of said plurality of frequencies cause said motor drive circuit to provide said motor drive stepping signals at a rate for stepping said motor drive at least twice during each revolution of the drum during a scan operation with each of said stepping signals provided during a revolution of the drum occurring essentially at the same point as the corresponding stepping signals for the preceding revolution of the drum.

4,280,146

ROTARY HEAD TYPE MAGNETIC VIDEO RECORDING AND REPRODUCING APPARATUS

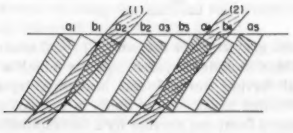
Takashi Misaki, Hirakata; Takanori Aoki, Higashiosaka, and Yukihiko Miyawaki, Kadoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 7, 1978, Ser. No. 967,357

Claims priority, application Japan, Dec. 13, 1977, 52-150205

Int. Cl.³ H04N *5/78*; G11B *27/02, 15/48*

U.S. Cl. 360—10 **3 Claims**



1. A rotary head type magnetic video recording and reproducing apparatus for recording and reproducing a video signal sequentially on a magnetic tape driven by a capstan by alternately using two rotary heads switched in response to a pulsed switching signal, such that each field of a frequency modulated video signal follows a record locus which is oblique to the length of the magnetic tape, characterized in that said apparatus comprises:

a capstan motor for driving the capstan;

gate means for providing a first motor driving signal corresponding to a first tape speed at a time of normal recording and reproduction and a second motor driving signal corresponding to a second tape speed which is slower than said first tape speed, said gate means selectively supplying said first motor driving signal to said capstan motor at the time of the normal recording and reproduction and for selectively supplying said second motor driving signal at the time of reproducing still pictures;

means for generating an envelope pulse signal at the time the envelope level of the reproduced video signal of said rotary head is a minimum;

means for comparing the phase of said switching signal corresponding to two rotary head switching points with the phase of said envelope pulse signal and for generating an output pulse signal when the phases of said signals are substantially the same;

a flip-flop connected to receive said switching signal as a set signal and connected to receive said output pulse signal as a reset signal, said flip-flop providing an enabling voltage to said gating means when a set signal is received; and

a motor braking means for braking said capstan motor in response to the reset of said flip-flop, whereby said motor is enabled when said flip-flop is set and said braking means is activated when said flip-flop is reset.

4,280,147

DIGITAL TELEVISION SYSTEM AND METHOD

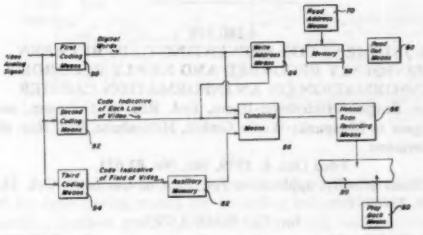
John L. E. Baldwin, Eastleigh, England, assignor to Independent Broadcasting Authority, London, England

Filed Feb. 2, 1979, Ser. No. 9,185

Claims priority, application United Kingdom, Feb. 2, 1978, 04326/78

Int. Cl.³ H04N *5/79*

U.S. Cl. 360—10 **16 Claims**



1. A method of assembling digital data representing a T.V. picture comprising,

producing digital words representing a line of video;

producing a digital code indicative of each line of video;

producing a digital code indicative of the field containing the line;

combining said digital codes and said digital words for each line of video;

storing said digital words line by line until a number of lines at least equal in number to the number of lines in a field has been stored; and

reading out said digital words.

4,280,148

AUDIO RECORDING APPARATUS AND METHOD

Arjun N. Saxena, 4217 Pomona Ave., Palo Alto, Calif. 94306

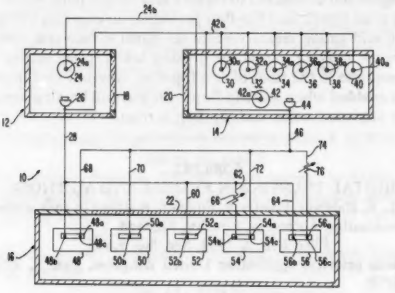
Filed Jan. 21, 1980, Ser. No. 113,886

Int. Cl.³ G11B *27/02*

U.S. Cl. 360—13 **10 Claims**

1. Apparatus for recording audio signals from a plurality of locations comprising: a first room for housing at least one performer, the first room having a first microphone therein for receiving audio signals from the performer therein; a second room adapted to house at least one other performer, the second room having a second microphone therein for receiving audio signals from the second performer; a third room having a plurality of recording devices therein, each of the rooms being acoustically isolated from the other rooms; means for each room, respectively, for placing it in visual contact with the other rooms, each recording device having a recording medium associated therewith, each recording medium having at least one recording channel thereon, there being a recording head for each channel, respectively, of each recording medium; and means for electrically coupling the first and second microphones with the recording heads of selected ones of the recording devices so that audio signals of the performers in

both rooms can be recorded together on a first medium, can be recorded separately on second and third media, and can be



recorded at greater or lesser volume on channels of fourth and fifth media.

4,280,149

EQUIPMENT FOR PREVENTING GAPS BETWEEN PREVIOUSLY RECORDED AND NEWLY RECORDED INFORMATION ON AN INFORMATION CARRIER

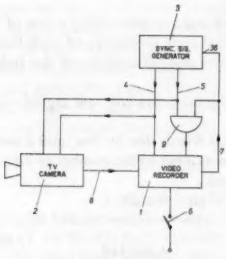
Peter Bragas, Hildesheim-Itzum, Fed. Rep. of Germany, assignor to Blaupunkt-Werke GmbH, Hildesheim, Fed. Rep. of Germany

Filed Oct. 4, 1979, Ser. No. 81,621

Claims priority, application Fed. Rep. of Germany, Oct. 14, 1978, 2844897

Int. Cl.³ H04N *5/795*

U.S. Cl. 360—14 **5 Claims**



1. In television equipment operable in a recording and in a reproducing mode, and comprising information carrier means **(12)**, read/write means **(16)** for recording signals on and reading signals from said information carrier means, means **(2)** for furnishing information signals to said read/write means when said equipment is operative in said recording mode, synchronization signal generator means **(3)** for furnishing horizontal and vertical synchronization signals to said information signal furnishing means, means **(14, 20, 21, 32, 33)** connected to said synchronization signal generator means for driving said record carrier means past said read/write means at a speed controlled by selected ones of said synchronization signals, and means **(6)** operative under external control for initiating reproduction of a brief section of last-recorded information on said information carrier means prior to recording of next subsequent information thereon, whereby said read/write means furnishes reproduced horizontal and vertical synchronization signals during said reproduction of said brief section of last-recorded information, the improvement comprising

means **(18, 24)** interconnected between said read/write means and said synchronization signal generator means for synchronizing said synchronization signal generator means to predetermined ones of said reproduced synchronization signals;

further comprising means **(9,30)** for automatically switching said equipment to said recording mode when said synchronization signals furnished by said synchronization signal generator means are in synchronism with said reproduced synchronization signals;

mode selector means **(31)** for switching said equipment to said recording mode or to said reproducing mode in response to, respectively, a first or a second mode selector signal; and

wherein said automatic switching means comprises an AND gate **(9)** having a first input connected to said synchronization signal generator means, a second input connected to said read/write means, and an output connected to said mode selector means for furnishing said first mode selector signal thereto.

4,280,150

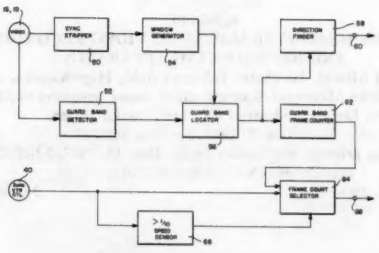
HELICAL SCAN VIDEO TAPE RECORDER GUARD BAND INTERFERENCE DETECTOR FOR GENERATING CONTROL PULSES AT LOW TAPE SPEEDS

George W. Bates, Santa Ana, Calif., assignor to Convergence Corporation, Irvine, Calif.

Filed Oct. 22, 1979, Ser. No. 87,204

Int. Cl.³ G11B *27/02, 15/48;* **G11b** *21/10;* **H04N** *5/78*

U.S. Cl. 360—14 **4 Claims**



1. A detection system for use with a helical scan video tape recorder which includes a video tape on which a composite video signal having vertical and horizontal synchronizing pulses is recorded in successive fields in a series of diagonal tracks separated from one another by a corresponding series of guard bands, with two such fields representing a frame of video information, said system serving to detect guard band interference signals and for generating control pulses in response thereto which indicate the frames of video information on the video tape at low tape speeds, said video tape recorder including magnetic head means for reading the composite video signal recorded in said diagonal tracks, and said detector system including: synchronizing signal stripper circuit means coupled to said magnetic head means for removing the vertical and horizontal synchronizing signals from the composite video signals; generator circuit means coupled to said synchronizing stripper circuit means for generating at least one control pulse during each field of said composite video signal and at a predetermined location in said field; a guard band detector circuit means coupled to said magnetic head means and responsive to the horizontal synchronizing signals of said composite video signal for detecting a guard band interference signal during each field of said composite video signal when the tape speed falls below a particular level; guard band locator circuit means coupled to said generator circuit means and to said guard band detector circuit means for producing output signals establishing the location of said guard band interference signal with respect to said control pulse generated by said generator circuit means during each of said fields; output circuitry coupled to said guard band locator circuit for producing an output

pulse each time a frame of video signal on the video tape is sensed by said electromagnetic head means, the video tape including a control track having pulses recorded thereon indicative of the frames of video signal recorded on the tape, the video tape recorder including a further magnetic head means for reading the pulses recorded on the control track, and said output circuitry including a selector circuit coupled to said further magnetic head means; and a speed sensor circuit coupled to said further magnetic head means and to said selector circuit for causing said selector circuit normally to select pulses generated by said further magnetic head means, and to cause said selector circuit to select pulses from said guard band locater circuit means when the tape speed falls below said particular level.

4,280,151

HIGH SPEED IMAGE RECORDING SYSTEM

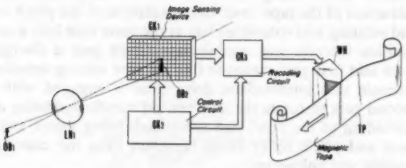
Tokuichi Tsunekawa; Toshio Sakane, both of Yokohama, and Tatsuya Taguchi, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 21, 1979, Ser. No. 13,364

Claims priority, application Japan, Feb. 24, 1978, 53-20658; Mar. 27, 1978, 53-35672; Mar. 27, 1978, 53-35673

Int. Cl.³ H04N *5/78*

U.S. Cl. 360—33 **17 Claims**



2. An image recording system comprising:

(a) an image scanning device having an array of a plurality of linear scanning means arranged for concurrently producing a plurality of sequences of linear scanning signals corresponding to a received image;

(b) means for concurrently extracting at most all the sequences of linear scanning signals from said plurality of linear scanning means in said scanning device;

(c) circuit means for concurrently receiving the extracted sequences of scanning signals and for concurrently producing a plurality of sequences of recording signals in response to said extracted sequences of scanning signals;

said circuit means including:

means for converting said extracted sequences of scanning signals into said plurality of sequences of recording signals;

means for concurrently accepting said extracted sequences of scanning signals extracted by said extracting means from said plurality of linear scanning means in said scanning device;

means for concurrently storing said extracted sequences of scanning signals from said accepting means; and

means for selecting either one of the scanning signals accepted through said accepting means and the scanning signals stored in said storing means for alternate application to said converting means; wherein said converting means produces first and second field recording signals in response to the signals accepted through said accepting means and the signals stored in said storing means, respectively; and

(d) means for concurrently receiving said plurality of sequences of recording signals and for concurrently recording the sequences of recording signals on different corresponding portions of a recording medium; said recording means having at least the same number of recording members for concurrently recording the signals on a recording channel of the recording medium at different portions of the recording medium as the number of said linear scanning means in said scanning device; and said recording means including rotating means for concurrently rotating said recording members along corresponding ones of the recording channels of the recording medium.

4,280,152

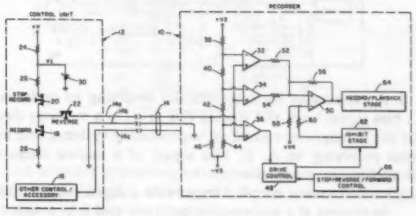
PLAYER REMOTE CONTROL HAVING SINGLE WIRE CONTROL

Bruce R. Silver, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 13, 1979, Ser. No. 29,680

Int. Cl.³ G11B *15/12*

U.S. Cl. 360—61 **5 Claims**



1. A control apparatus for a record and playback apparatus of the type having means for recording information on a recording medium and for thereafter retrieving such recorded information from the recording medium, and means for either advancing, stopping or reversing the movement of the recording medium past the recording and playback means; said control apparatus comprising:

control means responsive to the manual actuation thereof for providing at least four different control signals along a single conductor, said control means comprising three switch elements electrically interconnected with respect to each other so as to enable said control means to provide said four different control signals upon the manual actuation of said three switch elements in a manner wherein one of said four control signals occurs when all of said switch elements are in a closed conductive state and wherein each of the other three of said four control signals occurs respectively upon the opening of one of the switch elements with the other switch elements remaining in the closed conductive state; and

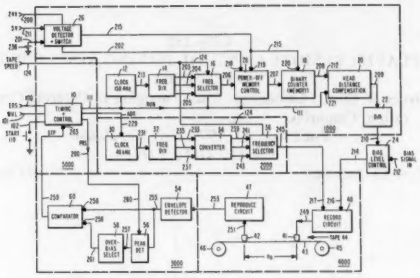
logic means responsive to a first of said four different control signals from said control means for providing a record signal to actuate the recording and retrieving means to record, responsive to a second of said four different control signals from said control means for providing a stop record signal to actuate the recording and retrieving means to stop recording, responsive to a third of said four different control signals from said control means for providing a reverse signal to actuate the advancing, stopping and reversing means to drive the recording medium in the reverse direction past the recording and retrieving means, and responsive to a fourth of said four different control signals occurring immediately subsequent to said third control signal for providing an advance signal to actuate the advancing, stopping and reversing means to drive the recording medium in the advance direction past the recording and retrieving means, and for providing a retrieve signal to actuate the recording and retrieving means to retrieve information recorded on the recording means.

4,280,153

DIGITALLY CONTROLLED AUTOMATIC BIAS CIRCUIT FOR MAGNETIC RECORDING

Lucas K. Tin, Redwood City, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Nov. 1, 1979, Ser. No. 90,137
Int. Cl.[3] G11B *5/47*
U.S. Cl. 360—66 **15 Claims**



1. An apparatus for automatically detecting an optimum A. C. bias signal level and storing that level in a memory device, for use in magnetic recording/reproducing systems, said apparatus receiving an A. C. bias signal of a known frequency, comprising in combination:

(a) a first means coupled to provide a digital signal linearly increasing at a known constant rate, said first means comprising a memory means;

(b) a second means coupled to convert said digital signal of said first means into an analog signal for controlling said received A.C. bias signal to have a linearly increasing level;

(c) a third means coupled to provide an analog signal of a known frequency and constant level;

(d) a fourth means coupled to receive and combine said A.C. bias signal controlled by said second means and said analog signal provided by said third means, and to record said combined signals on a movable recording medium;

(e) a fifth means coupled to provide a reproduce signal corresponding to said recorded signal;

(f) a sixth means coupled to said fifth means for detecting a maximum reproduce signal level attenuated by a predetermined amount of overbias; and

(g) a seventh means coupled to said sixth means for responsively providing a control signal to stop operation of said first means and to store said digital signal provided by said first means in said memory means when said reproduce signal level is detected.

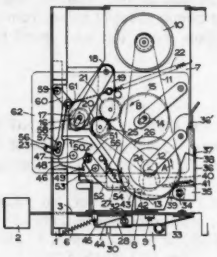
4,280,154

SLOT LOADING CASSETTE TAPE MECHANISM

Masatoshi Ando, 34-4-701, Denenchofu 2-chome, Ohja-ku, Tokyo, Japan

Filed Jan. 24, 1979, Ser. No. 6,255
Claims priority, application Japan, Jan. 24, 1978, 53-6579
Int. Cl.[3] G11B *15/28, 5/54, 21/22*
U.S. Cl. 360—96.4 **6 Claims**

1. A slot loading cassette tape mechanism comprising: a main chassis; a sub-chassis hingedly connected at one end to the main chassis and carrying a flywheel pulley with a tape drive capstan thereon, a tape take-up spindle, and a tape rewind spindle; a first gear means for driving said tape take-up spindle; a second gear attached to said tape rewind spindle; a rotatable plate carrying an intermediate drive gear and an intermediate driven gear mounted on said sub-chassis; said intermediate driven gear being normally engaged with said first gear means and said intermediate drive gear being driven by said flywheel pulley through an intermediate drive pulley attached to said flywheel pulley and an intermediate driven pulley attached to said intermediate drive gear; a head plate mounted on the main chassis; a tape head mounted on the head plate; a pinch roller mounted on said main chassis and adapted to bear against said capstan; selector means pivotally mounted on the main chassis to pivot to a first position causing said tape-head mounted on said head plate to retract, retraction of said head plate causing disengagement of said pinch roller from the tape and capstan, thereby causing driving of said tape take-up spindle at increased speed to give fast-forward winding of the tape; the



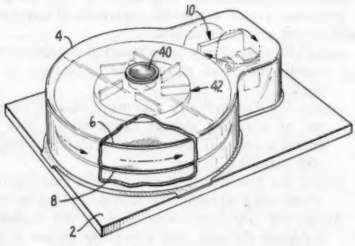
selector means being pivotable to a second position causing retraction of the tape head, disengagement of the pinch roller, and rotating said rotatable plate at the same time into a second position wherein said intermediate driven gear is disengaged from said first gear means to free the tape take-up spindle and wherein said intermediate drive gear is engaged with said second gear to rotate the tape rewind spindle and bring about rewinding of the tape; said sub-chassis being raised and said head and pinch roller being retracted from the cassette for loading and unloading.

4,280,155

METHOD OF IMPROVING AIR FLOW IN COMPACT DISC DRIVE

John C. Scott, Saratoga, and Robert I. McClure, Santa Clara, both of Calif., assignors to Memorex Mini Disc Drive Corp., Santa Clara, Calif.

Filed Jun. 4, 1979, Ser. No. 45,363
Int. Cl.[3] G11B *23/02, 25/04, 5/82*
U.S. Cl. 360—98 **3 Claims**



1. In a compact magnetic recording disc drive having a plurality of rotatingly driven rigid magnetic recording discs each having a diameter of less than nine inches and being coaxial with and space from one another and a plurality of selectively positionable magnetic transducer heads overlying portions of said discs and being suported a predetermined distance from the rotating discs by aerodynamic lift caused by the interaction of the moving air films carried by the flat surface of the rotating discs and the transducer heads said disc drive being supported by a base plate and enclosed by a cover, said cover having a length and a width, one of the dimensions being less than nine inches, the method of improving the air

flow over the disc surfaces to stabilize the support of the transducer heads while reducing thermal gradients, comprising

spacing adjacent said recording discs from one another a distance of at least 0.9 inch.

4,280,156

LIGHTLY LOADED RAMP-LAUNCHED READ/WRITE DEVICE FOR A DATA CARRIER

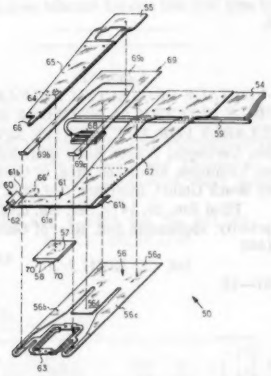
Jean Villette, Ollainville, France, assignor to Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme), Paris, France

Filed Mar. 9, 1979, Ser. No. 18,984

Claims priority, application France, Mar. 24, 1978, 78 08616

Int. Cl.³ G11B *5/48, 5/54, 21/02*

U.S. Cl. 360—105 **8 Claims**



1. A ramp-launched read/write device (**50**) for a data carrier comprising: an arm (**54**), a loading spring (**55**) having one end fixedly connected to the said arm (**54**) and a free end part (**66**), a platform (**57**) incorporating at least one read/write transducer, a carrier means (**56**) for carrying the platform, said carrier means comprising a suspension spring (**56**) having one end (**56***a*) fixedly connected to the said arm (**54**) and a free end (**63**) for locating and supporting the platform (**57**), spring means (**60, 65, 67, 69**) for controlling the position of the platform (**57**) in relation to the data carrier (**51**), said controlling means (**60, 65, 67**) comprising a guide member having a level surface (**61***a*) and at least one ramp surface (**61***b*), and means (**62**) adapted to cooperate with the said guide member (**61**) for moving the platfrom (**57**) between a first, rest position and a second, read/write position close to the data carrier (**51**) to allow the data carrier (**51**) to be read from or written on, said controlling means (**60, 65, 67**) having said guide member (**61**) fixedly but flexibly connected to the said arm (**54**), the said free end part (**66**) of the loading spring contacting the said guide member (**61**) in accordance with the said positions of the platform (**50**) and anti-vibration means comprising a spring (**69**) having one end (**61***a*) fixedly connected to the said arm (**54**) and a free end (**60***b*, **69***c*) resting against the free end (**63**) of the suspension spring (**56**) of said carrier means for minimizing vibration of said platfrom.

4,280,157

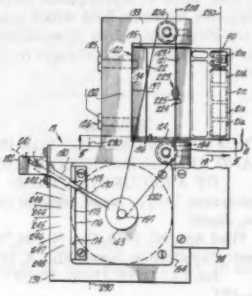
ACTUATOR APPARATUS FOR MAGNETIC DISC RECORDING SYSTEMS

Robert W. Herman, Laguna Beach, and William J. Kearns, Costa Mesa, both of Calif., assignors to New World Computer Company, Inc., Costa Mesa, Calif.

Filed Jun. 1, 1979, Ser. No. 44,535

Int. Cl.³ G11B *5/48, 5/60, 21/08*

U.S. Cl. 360—106 **19 Claims**



1. An actuator apparatus, having an actuator base plate, for positioning a plurality of magnetic heads transversely across the surface of a rotating disc, comprising:

parallelogram means comprising an inner member affixed to said actuator base plate, and an outer member resiliently affixed to said inner member and parallel thereto;

suspension spring means affixed to said outer member and affixed to said magnetic heads for urging said magnetic heads toward said rotating disc surface; and

actuator means coupled to said outer member for positioning said outer member, said suspension spring means, and said magnetic heads with respect to said inner member transversely across said rotating disc surface.

4,280,158

MAGNETORESISTIVE READING HEAD

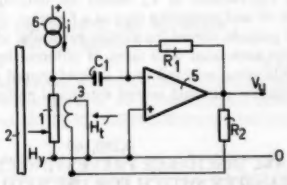
Edmond de Niet, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 6, 1979, Ser. No. 45,908

Claims priority, application Netherlands, Jun. 19, 1978, 7806568

Int. Cl.³ G11B *5/02, 5/12, 5/30*

U.S. Cl. 360—113 **6 Claims**



1. A magnetic reading head for detecting information representing magnetic fields which comprises:

an electromagnetic transducer of the magneto-resistive type having at least one operating range which is substantially linear;

means for producing a varying magnetic field which counteracts the field sensed by said transducer to maintain said transducer in said one operating range;

said transducer being a substantially flat, magneto-resistive

element of metallic ferromagnetic material having an easy axis of magnetization in the plane of said element, said element being provided on two oppositely located ends with contacts for the connection to an associated source providing a measuring current and to an associated reading amplifier; and

said means for producing comprising a turn of an electrically conductive material which is provided in a negative feedback loop of the reading amplifier, said turn being arranged relative to the magneto-resistive element in such a manner, that, when a current passes through it, it generates a negative feedback field which causes a magnetic flux in the element which is directed oppositely to the magnetic flux caused in said element by a detected magnetic field.

4,280,159

METHOD OF AND APPARATUS FOR INDICATING LENGTH AND REMAINING RECORDING CAPACITY OF A RECORDING TAPE

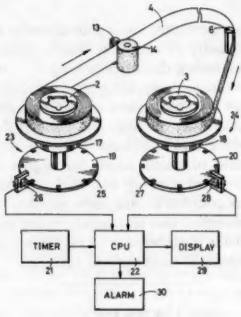
Masayuki Nakayama, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Apr. 30, 1979, Ser. No. 34,768

Claims priority, application Japan, May 8, 1978, 53-54251

Int. Cl.³ G11B *15/00, 27/00*

U.S. Cl. 360—137 **22 Claims**



1. In apparatus for recording and/or reproducing information on recording tape transported between supply and take-up reels, the combination comprising tape drive means for driving said tape from one to the other of said reels at a predetermined speed; sensing means for sensing the rotational periods of said supply and take-up reels while said tape is driven at said predetermined speed, the rotational period of said supply reel being represented as T_S and the rotational period of said take-up reel being represented as T_T; means for determining the overall length of said recording tape as a function of said sensed rotational periods; means for storing particular identifying characteristics associated with tapes of different lengths; and means for indicating selected ones of said stored characteristics in accordance with said sensed rotational periods.

4,280,160

ARC DISCHARGE PREVENTING CIRCUIT OF TRANSFER SWITCH FOR USE WITH INDUCTIVE LOADS

Toshihiro Mori, Sagamihara, Japan, assignor to JECO Co. Ltd., Kawasaki, Japan

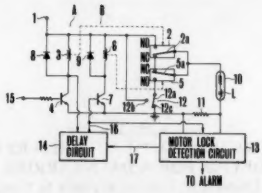
Filed Apr. 2, 1979, Ser. No. 25,810

Claims priority, application Japan, Mar. 31, 1978, 53-42511[U]

Int. Cl.³ H02P *1/04*

U.S. Cl. 361—3 **5 Claims**

1. An arc discharge preventing circuit of a transfer switch for use with an inductive load comprising a first contact drive circuit for operating a first transfer switch in response to a drive signal for driving said inductive load, means for detecting a predetermined time after initiation of said drive signal an excessively large current flowing through said inductive load to produce an output signal, a delay circuit responsive to said output signal of said detecting means for producing an output a predetermined time after termination of said drive signal, said delay circuit producing its output substantially in response to



the termination of said drive signal in the absence of said output signal of said detecting means, and a second contact drive circuit responsive to the output of said delay circuit for operating a second transfer switch to continue energization of said inductive load for a predetermined interval, said first and second transfer switches being connected in parallel between said inductive load and a source of supply, and normally closed contacts of said first and second transfer switches being interconnected.

4,280,161

OVER-VOLTAGE PROTECTED, SELF-CONTAINED MOBILE ELECTRICAL NETWORK SYSTEM, PARTICULARLY FOR AUTOMOTIVE APPLICATIONS

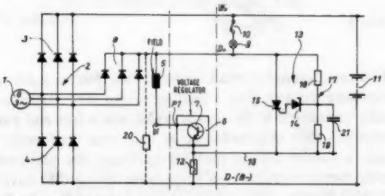
Edgar Kuhn, Gerlingen; Walter Kohl, Bietigheim, and Günter Schramm, Vaihingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jan. 26, 1979, Ser. No. 6,922

Claims priority, application Fed. Rep. of Germany, Mar. 16, 1978, 2811440

Int. Cl.³ H02H *3/20*

U.S. Cl. 361—18 **4 Claims**



1. Overload protected, self-contained mobile electrical network system having

two d-c terminals;

an electrical generator (G) having its output connected to the d-c terminals and further having a field winding;

a storage battery (**11**) connected to the d-c terminals of the network and to the output of the generator to store electrical energy therein;

a voltage regulator (**6**) connected to sense the output voltage of the generator and intermittently controlling current flow through the field winding (**5**) thereof;

and an over-voltage control circuit to prevent damage to the battery connected to the generator and to continuously and positively interrupt current flow to the field winding of the generator upon short circuit within the voltage regulator including

a fuse (**12**) connected in series with the field winding (**5**) of the generator and to one(−) terminal of the network;

and means providing a control current to said fuse independently of said voltage regulator under over-voltage conditions of said network,

comprising

a thyristor (**15**) having one terminal of its main current carrying path connected to the other d-c terminal (+) of the network;

a branch circuit (**16**) from the other terminal of the main current carrying path of the thyristor to the fuse (**12**) at a point remote from said one d-c terminal (−);

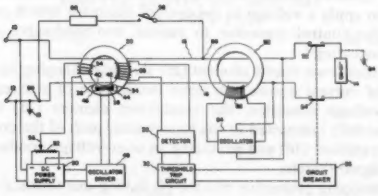
a Zener diode providing a reference voltage, connected to and controlling application of a trigger voltage to the gate terminal of the thyristor to cause the thyristor to become conductive when the output voltage from the generator has a prohibited excess relationship with respect to said reference voltage, whereby conduction of said thyristor will apply short circuit current directly from said other d-c terminal (+) of the network through the branch circuit (**16**) to the fuse and to the one d-c terminal (−) of the network to cause the fuse to burn out under loading by said short circuit current and thereby interrupt current flow to the field winding (**5**) regardless of the conduction condition of the voltage regulator.

4,280,162

GROUND FAULT CIRCUIT INTERRUPTER

David M. Tanka, Lake Katrine, and Thomas G. Reynolds, Woodstock, both of N.Y., assignors to North American Philips Corporation, New York, N.Y.

Filed Aug. 4, 1977, Ser. No. 821,710
Int. Cl.³ H02H *3/28*
U.S. Cl. 361—45 **11 Claims**



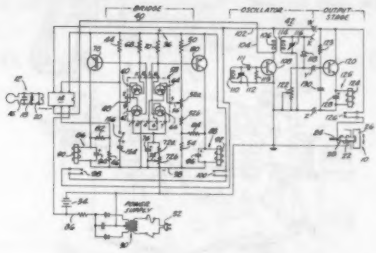
1. A current sensing apparatus comprising a magnetically controlled ferromagnetic core adapted to be magnetically coupled to an electric conductor in which the current to be sensed flows and providing a magnetic circuit for the flow of a circulating flux determined by said current, control winding means magnetically coupled to said core for applying a periodic magnetic flux to at least a part of said core magnetic circuit, means for supplying a periodic current to said control winding means of a magnitude to induce a magnetic flux in said part of the core magnetic circuit so as to produce substantial changes in the core permeability sufficient to substantially alter the magnitude of said circulating flux when it is present in the core magnetic circuit, an output winding magnetically coupled to said core for deriving an output signal voltage determined by the rate of change of the altered circulating flux, means coupled to said core for establishing a DC bias flux therein of a magnitude to bias the core onto a linear segment of its B-H characteristic curve, and signal processing means coupled to said output winding for processing said output signal.

4,280,163

ELECTRONIC LOCK

William E. Osborne, Whittier, Calif., assignor to Homexx International Corp., Anaheim, Calif.

Filed Mar. 5, 1979, Ser. No. 17,244
Int. Cl.³ E05B *49/00*
U.S. Cl. 361—172 **9 Claims**



1. Electronic lock mechanism, comprising:

electrically operable bolt means having an energizing circuit;

a resistance bridge network having an input circuit and output circuit;

key means for controlling the activation of said bolt means, said key means in use being operative to connect the input circuit of said bridge with a voltage source and insert a resistor component into said bridge network of a value to balance the bridge; and

control means including switching means connected with the output circuit of said bridge network and being operative in a balanced bridge mode to connect the energizing circuit of said bolt means with said voltage source, said switching means comprising:

a pair of relays having their contacts connected in series and requiring simultaneous closure for the energization of said bolt; and

a pair of regenerative differentially connected electronic switch means having input connections respectively with the output junctures of said bridge network, and outputs respectively connected with said relays, and being operative to selectively activate the relays according to the direction of unbalance of said bridge, and to activate both of the relays in response to a balanced operative mode of said bridge.

4,280,164

FAIL-SAFE RELAY SYSTEM

Edward P. Kozek, Southbury, Conn., assignor to IMS Ltd., Quebec, Canada

Filed Jul. 24, 1979, Ser. No. 60,228
Int. Cl.³ H01H *47/32*
U.S. Cl. 361—179 **8 Claims**

1. A fail-safe relay system for controlling the de-energization and permissible energization of an interconnected device in response to a signal having at least two states representing the same, comprising:

(A) a first and second relay, each relay having a relay coil and a pair of relay contacts, the relay contact pairs serially connected to each other, connectable to a source of power at one end, and interconnectable to the device at the other end so as to de-energize the device if either or both pairs of relay contacts are open and to permit energization of the device if both pairs of relay contacts are closed;

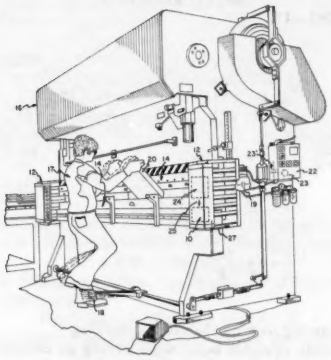
(B) means for sensing the open and closed state of each pair of relay contacts;

(C) first and second thyristors, each interconnected with one of the relay coils so as to control energization and de-energization of the interconnected relay coil;

(D) means for receiving the signal representing a desired

de-energization or permissible energization of the interconnected device;

(E) electronic initialization circuitry connected to the signal receiving means and the relay contacts state sensing means so as to energize the first and second thyristors if, and only



if, the signal is in a first state and the relay contact sensing signals both indicate that the relay contacts are in the open state; and

(F) means for maintaining energization of the thyristors once they have been energized by the initialization circuitry so long as the received signal continues to be in the first state.

4,280,165

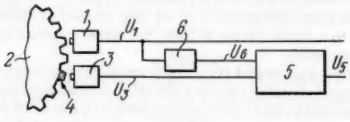
DEVICE FOR MEASURING ANGULAR POSITION OF A GEAR IN A DIGITAL IGNITION SYSTEM OF AN INTERNAL COMBUSTION ENGINE

Boris S. Pospelov, ulitsa Banykina, 6, kv. 116; Alexandr F. Bendersky, Moskovsky prospekt, 33, kv. 265, both of Tolyatti Kuibyshevskoi oblasti; Jury A. Kolesov, ulitsa Gilyarovskogo, 54, kv. 3, Moscow; Yakov N. Nefediev, Sirenevy bulvar, 12, kv. 22, Moscow; Mikhail I. Levkovich, ulitsa 1812 goda, 8, kv. 56, Moscow, and Eduard N. Asinovsky, ulitsa Koptevskaya, 89, kv. 24, Moscow, all of U.S.S.R.

Filed Apr. 24, 1979, Ser. No. 32,906

Int. Cl.³ H01H *47/00*

U.S. Cl. 361—236 **1 Claim**



1. A device for measuring angular position of a gear in a digital ignition system of an internal combustion engine, comprising: an origin sensor responsive to the passage by of a pre-set tooth of the gear; a pulse former having a first input connected to said origin sensor; a rectifier and filter circuit having an output connected to a second input of said pulse former; an angle pulse sensor having an output coupled to the input of said rectifier and filter circuit.

4,280,166

OVER-VOLTAGE PROTECTED SOLID-STATE IGNITION SYSTEM

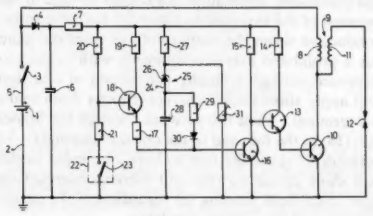
Erich Jesse, Marbach, and Reinhard Leussink, Vaihingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 9, 1978, Ser. No. 929,939

Claims priority, application Fed. Rep. of Germany, Aug. 11, 1977, 2736178

Int. Cl.³ F02P *15/00*

U.S. Cl. 361—253 **3 Claims**



1. Over-voltage protected ignition system for an internal combustion engine, for connection to a source of power (1) and to a source of ignition signals (20–23) having

an ignition coil (9);

a power transistor (10) serially connected to the source of power and the ignition coil;

and a control circuit including a control transistor (16) which, in turn, controls the switching state of the power transistor, the control circuit being connected to cause the control transistor to be in conductive state when the power transistor is blocked, and vice-versa,

and a base circuit (17–19) connected to said control transistor (16) and controlled by said source of ignition signals; and comprising

a power source over-voltage monitoring circuit (24) sensing when the voltage of the source reaches a value which would cause excessive current flow through the power transistor (10) and connected to the control transistor (16) to apply a voltage to the control transistor which causes the control transistor to assume non-conductive state, including

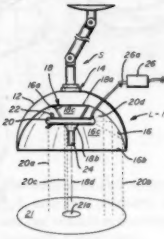
a breakdown circuit element (25) abruptly changing its state of current conduction upon occurrence of a threshold voltage condition, the breakdown element (25) being serially connected to the base-emitter path of the control transistor (16) and providing an over-voltage conduction signal thereto;

a dropping protective resistor (7) having one terminal connected to the power source;

a parallel circuit network formed by the control circuit for the power transistor (10) and the over-voltage monitoring circuit (24) one end point of the parallel circuit network being connected to the control electrode of the power transistor (13), the other end point of the parallel circuit network being connected to the terminal of said dropping protective resistor (7) remote from the power source, so that the dropping protector resistor will form a common dropping resistor for the branches of said parallel circuit network;

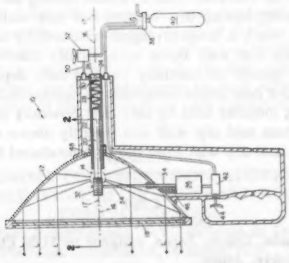
and a capacitor (28) which provides, upon occurrence of an over-voltage condition, for gradual application of the over-voltage signal to the control transistor to control said control transistor (16) to become conductive gradually, thus causing disconnection of the power transistor (10) and inhibiting generation of a spurious ignition event and spurious response upon presence of noise pulses, while providing for reliably decreased reduction of the power transistor upon excessive over-voltage of the source.

4,280,167
OPERATING ROOM SURGICAL LAMP
Edwin W. Ellett, 1000 Holik Dr., College Station, Tex. 77840
Filed Sep. 13, 1979, Ser. No. 75,092
Int. Cl.³ A61G *13/00*
U.S. Cl. 362—33 **11 Claims**



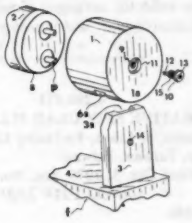
1. An improved operating room surgical lamp comprising:
a lamp housing having a mounting means thereon adaptable to be mounted with a suitable support;
said lamp housing having an interior concave reflective surface, said lamp housing having a first closed end and a second open end, said concave reflective surface positioned to reflect light out said second open end to illuminate a desired area;
a central reflective means mounted within said lamp housing at said closed end, said central reflective means having a reflective surface thereon to reflect light to a central position in the light field; and
a tubular light source mounted within said lamp housing about said central reflective means for emitting light rays outwardly to reflect off of said interior concave reflective surface of said housing and for emitting light rays inwardly to reflect off of said central reflective means to illuminate a work area.

4,280,168
FLASHLIGHT AND SIGNALLING APPARATUS
Bronson Potter, R.F.D. #1, Mason, N.H. 03048
Filed Oct. 22, 1979, Ser. No. 87,023
Int. Cl.³ F21V *21/30*
U.S. Cl. 362—35 **18 Claims**



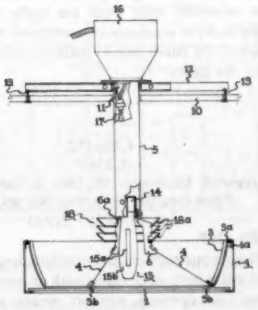
1. A flashlight comprising a reflector having a reflection zone and constructed to beam light from said zone to a region to be illuminated and an abrasive member and pyrophoric member, said abrasive member and pyrophoric member mounted for predetermined relative movement against each other to produce and project a stream of self-igniting particles of pyrophoric material abraded from said pyrophoric member, the direction of said relative projecting movement aligned with said reflection zone of said reflector, and the point of contact between said abrasive member and pyrophoric member positioned to present said stream of particles while burning to said reflection zone and means for producing said relative movement between said abrasive member and pyrophoric member.

4,280,169
FLUORESCENT LAMP END CAP
Carl J. Allen, 16272 Glynn Rd., East Cleveland, Ohio 44112
Filed Jul. 25, 1979, Ser. No. 60,367
Int. Cl.³ F21S *3/00*
U.S. Cl. 362—217 **8 Claims**



1. An end cap for use with a fluorescent lamp fixture having spaced lampholder means between which a fluorescent lamp is suspended, said end cap comprising a body having a first cavity formed therein and opening to one end of said body, a second cavity formed in said body and connecting with said first cavity, said second cavity exiting to the exterior of said end cap and adapted to permit one of said lampholder means to be inserted therethrough and into said second cavity, each end of said lamp being inserted through said one end and into the first cavity of an end cap disposed over one of said lampholder means and releasably engageable therewith to secure said lamp end, lampholder means and end cap together.

4,280,170
LUMINAIRE
Samuel L. Baldwin, East Flat Rock, N.C., assignor to General Electric Company, Schenectady, N.Y.
Filed Sep. 26, 1979, Ser. No. 78,964
Int. Cl.³ F21S *3/00*
U.S. Cl. 362—224 **11 Claims**



1. A luminaire adapted to be suspended from a ceiling or the like for semi-indirect illumination of a work area below the ceiling comprising, in combination, an elongated support member adapted to be secured at its upper end to the ceiling, a housing suspended from said support member and arranged

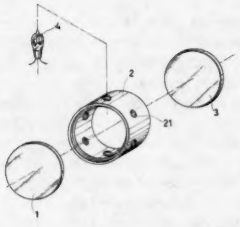
below the lower end thereof, said housing having a side wall defining an open top and having a bottom comprising semi-transparent lens means, elongated lamp means removably attached to the lower end of said support member and extending with its lower portion into said housing, said housing having reflector means within its side wall extending around the lower portion of said lamp means, said reflector means reflecting direct light rays from said lamp means upwardly and outwardly from said housing toward the ceiling principally in paths between said lamp means and said side walls, said semi-transparent lens means reflecting upwardly toward the ceiling a portion of the direct light rays incident thereon and transmitting downwardly therethrough substantially the remainder of said incident light rays, said reflector means comprising an annular opaque reflector arranged closely adjacent and substantially co-extensive with said housing side wall.

4,280,171

DECORATIVE SPECULAR ILLUMINATOR

Thomas N. Huang, 6, Lin 1, Fu-Hsing Li, Ta Sih Town, Tao-Yuan County, Taiwan, Taiwan

Filed Oct. 1, 1979, Ser. No. 80,576
Int. Cl.³ F21V *1/00*
U.S. Cl. 362—240 **4 Claims**



1. A decorative illuminator comprising:
(a) at least a pair of panes capable of passing visible light, said panes having a layer of light-filtering resin disposed thereon, said layer partially reflecting light impinging both the side of the layer adjacent the pane and the side away from the pane;
(b) means for disposing said panes essentially parallel to each other; and
(c) means for disposing a plurality of bulbs between said panes, whereby light from the bulbs will project outwardly to form an image of numerous bulbs on the outer surface of the panes due to multiple reflections occurring among the panes.

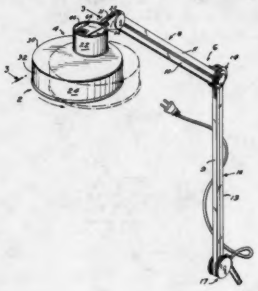
4,280,172

LAMP

Jens C. Krogsrud, Ekelyveien 10, Oslo 3, Norway

Filed Oct. 31, 1979, Ser. No. 89,909
Int. Cl.³ F21V *21/26*
U.S. Cl. 362—269 **10 Claims**

1. In a lamp construction, the combination of, an enclosure having a circular bottom opening with an annular ledge means surrounding said opening, support means positioned within said opening and having a portion overhanging said ledge and providing an opening concentric with the first-named opening and of lesser diameter, a shade having its top wall extending along the bottom of said support means and having an opening concentric with and of substantially the diameter of the second named opening, anti-friction means positioned between said flange and above the adjacent top surface of said lamp shade, and means attaching said lamp shade to said support means



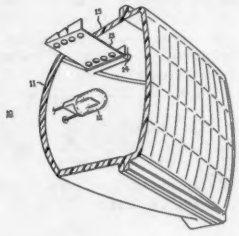
within the zone between the first-named and second-named of said openings.

4,280,173

HEAT SHIELD FOR PLASTIC HEADLAMP

Irving Bradley, Novelty, and Vincent Vodicka, South Euclid, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 19, 1978, Ser. No. 916,490
Int. Cl.³ F21V *7/20*
U.S. Cl. 362—294 **6 Claims**



1. A headlamp comprising, in combination, a plastic housing having a curved rear reflective wall having an optical focus, said housing having top, bottom and side walls intersecting said rear wall, a lamp arranged substantially at said optical focus, said top wall being substantially planar and having laterally spaced substantially parallel rails depending therefrom, and a heat shield comprising a substantially planar heat reflecting member held by said rails generally parallel to and spaced from said top wall and directly above said lamp for shielding said top wall from the heat produced by said lamp.

4,280,174

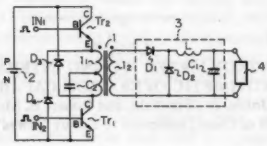
DC-DC CONVERTER

Eijiro Sonda, Tokyo, Japan, assignor to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Jan. 17, 1980, Ser. No. 112,752
Claims priority, application Japan, Feb. 1, 1979, 54-10802; Feb. 1, 1979, 54-12123[U]; Feb. 1, 1979, 54-12124[U]
Int. Cl.³ H02M *3/335*
U.S. Cl. 363—24 **6 Claims**

1. A DC-DC converter for converting a primary DC voltage to a secondary DC voltage comprising a transformer with a primary winding and a secondary winding each would on a ferromagnetic core, a primary DC voltage power source, switching transistors connected between said DC voltage

power source and the ends of the primary winding of said transformer, means for controlling the status of said transistors so that the current in the primary winding from the DC voltage power source is switched, a rectify/smoothing circuit



connected between the output of the secondary winding of the transformer and a load, and said primary winding of the transformer having a center tap which is connected to a fixed predetermined potential through a capacitor.

4,280,175

ALTERNATING TO DIRECT VOLTAGE CONVERTER

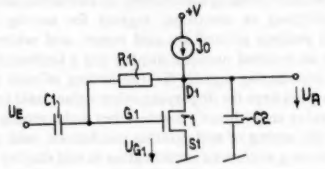
Oskar Leuthold, Marin, Switzerland, assignor to Ebauches Electroniques SA, Marin, Switzerland

Filed Jun. 24, 1980, Ser. No. 162,464

Claims priority, application Switzerland, Jul. 13, 1979, 6543/79

Int. Cl.³ H02M *7/217*

U.S. Cl. 363—127 **10 Claims**



1. Alternating to direct voltage converter in form of an integrated circuit comprising on a same substrate at least a first field effect transistor with insulated gate, a current limiting means feeding said first transistor and a first coupling capacitor connected to the input of said first transistor for controlling said first transistor by said alternating voltage, further comprising a second field effect transistor with insulated gate connected between the input and the output of the first transistor, a second capacitor connected to the output of the first transistor for short-circuiting said output for the alternating voltage signals, said first transistor producing on said output a direct voltage function of the amplitude of said alternating voltage.

4,280,176

MEMORY CONFIGURATION, ADDRESS INTERLEAVING, RELOCATION AND ACCESS CONTROL SYSTEM

Kwang G. Tan, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 26, 1978, Ser. No. 973,466

Int. Cl.³ G06F *9/26*

U.S. Cl. 364—200 **16 Claims**

1. A storage control for configuring and accessing a main storage in a data processing system, comprising:

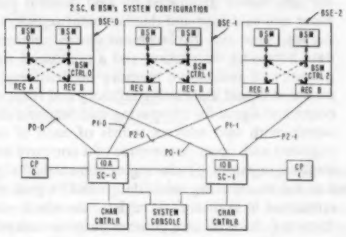
a plurality of basic storage modules (BSMs) in the main storage selectable by the storage control,

BSM control means connected to the BSMs for storing an operational main storage configuration, comprising a plurality of entry registers in the BSM control means, each entry register being associated with a range of absolute addresses to be accessed in main storage, each entry register being settable to the address of any BSM selectable by the storage control,

means for loading values into the entry registers in the BSM control means,

an input register for receiving an access command for accessing an addressable unit of data in main storage, the access command containing an absolute address and command bits,

entry addressing means for selecting one of the entry registers in the BSM control means, means connecting a first



set of bit positions of the input register to the entry addressing means, wherein at least one bit position in the first set of bit positions addresses the absolute address boundaries which are spaced by an amount equal to the size of a BSM,

and means for selecting a BSM by receiving the BSM address in a selected entry register for activating a signal to the addressed BSM,

whereby a set of values loaded into the entry registers assigns absolute addresses to the different parts of the plural BSMs to obtain a main storage configuration.

4,280,177

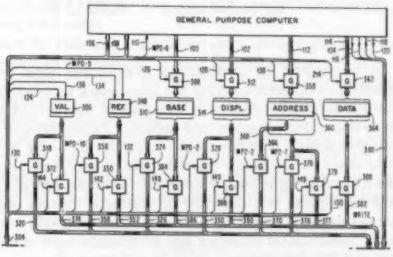
IMPLICIT ADDRESS STRUCTURE AND METHOD FOR ACCESSING AN ASSOCIATIVE MEMORY DEVICE

Herbert Schorr, Briarcliff Manor, and Irving Waldawsky-Berger, New York, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 29, 1979, Ser. No. 53,658

Int. Cl.³ G06F *13/00*

U.S. Cl. 364—200 **5 Claims**



1. In a general purpose computer system of the type including a general purpose computer having a storage cache containing data and base and displacement registers wherein said general purpose computer and said base and displacement registers generate data accessing instructions including base and displacement information for accessing data from said storage cache of said general purpose computer,

a structure for accessing data from an associative memory containing a plurality of implicit registers and using said

base and displacement information generated by said general purpose computer and said base and displacement registers to access said data from said associative memory comprising:

an associative memory including a plurality of associative memory implicit registers with read-in, read-out control circuits, each of said implicit registers containing data the same as data contained in said storage cache of said general purpose computer and identified by a different address word composed of a combination of a base and displacement word, means connected to said general purpose computer, said base and displacement registers and said associative memory and responsive to a data accessing instruction generated by said general purpose computer and said base and displacement registers for providing said base and displacement words obtained from said data accessing instruction and a command signal to said plurality of associative memory implicit registers, means included in said associative memory and responsive to said command signal for comparing said base and displacement words with said address words of each of said implicit registers and, upon occurrence of a compare in one of said implicit registers, producing a "data valid" signal,

means for transferring said "data valid" signal and the data contained in said implicit register on which said compare occurred, back to said general purpose computer,

wherein said general purpose computer further commences to generate an address for obtaining data from said storage cache of said general purpose computer at the same time said data accessing instructions are generated,

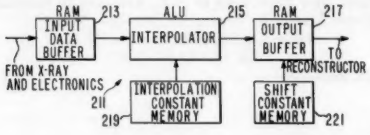
and wherein said "data valid" signal is transferred to said general purpose computer with said data and functions to abort said storage cache address generation of said general purpose computer.

4,280,178

COMPUTERIZED TOMOGRAPHIC RECONSTRUCTION METHOD UTILIZING REFLECTION

Menahem Nassi, and James P. Stonestrom, both of Palo Alto, Calif., assignors to General Electric Company, Milwaukee, Wis.

Filed Aug. 24, 1979, Ser. No. 69,943
Int. Cl.³ G06F *15/42*; G01N *21/00*
U.S. Cl. 364—414 **8 Claims**



1. In the method for constructing a two-dimensional representation of an object slice lying in a quasi-plane by positioning a radiation source for providing radiation in the form of a fan beam so that at least some of said radiation passes through said object; positioning detector means including an array of side by side detector elements opposite said source and aligned therewith and lying in said quasi-plane for detecting radiation in said quasi-plane not absorbed or scattered by said object; effecting relative rotation between said object and said source-detector combination about an axis of rotation such that said source and detector means remain in said quasi plane;

effecting measuring from said source at a plurality of angular positions during said rotation to obtain a multiplicity of measured data readings from said detector elements at each said projection;

and reconstructing a two-dimensional representation of the object by convolving, scaling and back projecting said data without reordering said fan beam into a different set of rays; the improvement comprising:

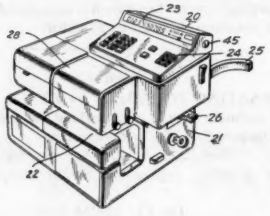
generating estimated detector data at desired projection angles which are additional to the projection angles at which said detector data is measured, by geometrically reflecting said measured detector data obtained during said projections; and performing said reconstruction step utilizing both said measured and said estimated detector data.

4,280,179

POSTAGE METER HAVING INTERACTIVE ARITHMETIC OPERATION CAPABILITY

Howell A. Jones, Jr., Fairfield, and Robert B. McFiggans, Stamford, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Oct. 30, 1979, Ser. No. 89,424
Int. Cl.³ G06F *15/20*
U.S. Cl. 364—464 **13 Claims**



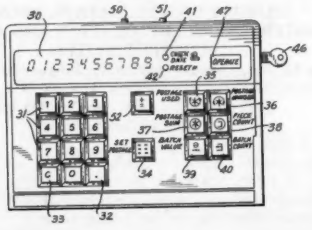
1. In a postal meter having a secure housing incorporating therein a settable printing mechanism, an electronic accounting system including an electronic register for storing a value related to postage printed by said meter, and wherein said meter has an external numeric display and a keyboard having keys for introducing signals for the setting of said printing mechanism and keys for displaying other values, said keyboard further having an arithmetic function key and a setting key for initiating the setting of said printing mechanism, said arithmetic key initiating arithmetic modification in said display and not in said printing mechanism; the improvement wherein means are provided in said housing and responsive to operation of said setting key for enabling the completion of arithmetic modification of said display and the setting of said printing mechanism in accordance therewith.

4,280,180

ELECTRONIC POSTAGE METER HAVING FIELD RESETTABLE CONTROL VALUES

Alton B. Eckert, Norwalk; Edward C. Duwel, Trumbull, both of Conn., and John H. Soderberg, Monroe, N.Y., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Oct. 30, 1979, Ser. No. 89,425
Int. Cl.³ G06F *3/02, 15/20*
U.S. Cl. 364—464 **15 Claims**



1. Postal meter having a plurality of defined states, including

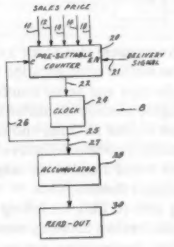
a first state defining meter operation and a second state defining range resettability, said meter comprising a settable printing means, computing means coupled to control the operation of said printing means and including means for storing data corresponding to a preselected postal value range, a keyboard coupled to said computing means for setting said printing means to desired values of postage to be printed, said computing means being responsive to postage values entered into said keyboard that are defined by said postal value range to control said postal meter within said postal value range, field servicing means operatively coupled to said postal meter to switch said meter from said first state to said second state, and means responsive to said second meter state and to a postage value subsequently entered in said keyboard for altering the limits of said postal value range.

4,280,181

CASH ACCOUNTABILITY CONTROL CIRCUIT FOR VENDING AND LIKE MACHINES

Joseph L. Levasseur, Chesterfield, Mo., assignor to H. R. Electronics Company, St. Louis, Mo.

Continuation of Ser. No. 688,384, May 20, 1976, abandoned.
This application Nov. 15, 1979, Ser. No. 94,576
Int. Cl.[3] G06F *15/21, 7/50*
U.S. Cl. 364—464 **6 Claims**



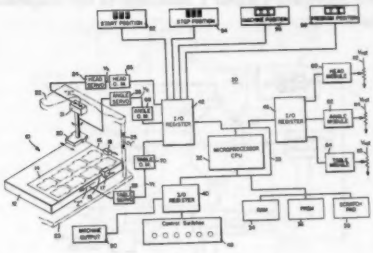
1. Means to keep a running total of sales from a vending or like machine, which machine includes means to produce signal responses to represent the value of each article that is vended and other means to produce signals to cause vend operations to take place comprising a control circuit including first entry means having first and second input means, said first input means connected to receive signal responses representing the value of each article that is vended, said second input means connected to receive vend signals, said first entry means including means responsive to a vend signal to enter therein an amount to represent the price of such vend and other means responsive to the entry of an amount into said first entry means to produce an output therefrom, a clock responsive to said first entry means output to produce periodic pulses, said clock continuing to produce output pulses regardless of the status of said second input of said first entry means so long as the price amount entered into said first entry means exceeds the number of periodic pulses produced by said clock, accumulator means operatively connected to receive such periodic pulses, said accumulator means responsive to receipt of such periodic pulses to effect an increase in the amount stored therein, means to feed back the periodic pulses from the clock to said first entry means, said periodic pulses being entered in said first entry means in a way to combine with the signals entered therein from the vending machine until the first entry means has a predetermined entry therein, and means in said first entry means responsive to the occurrence of said predetermined entry condition therein to prevent the further production of said output therefrom.

4,280,182

MICROCOMPUTER CONTROL SYSTEM

John Mickowski, 129 Main St., Franklin, N.J. 07416

Filed May 14, 1979, Ser. No. 38,387
Int. Cl.[3] G06F *15/46*
U.S. Cl. 364—475 **6 Claims**



1. A microcomputer control system for operating a die press stamping machine including a cutting die mounted in a head assembly over a movable table upon which is located stock material to be die cut by said cutting die following a predetermined cutting program selected from a multiple number of cutting programs each defined by a sequence of programmed machine positions with each position represented by a head, angle and table coordinate respectively, servo drive feedback means for adjusting the relative position between said head assembly and table along transverse axes and for rotating said cutting die in response to command signals generated from said control system in correspondence with each programmed machine position and means for reciprocating said cutting die; said microcomputer control system comprising:

non-volatile random access data storage memory means;

adjustable program position display means for identifying each address location in said memory means;

means for manually presetting the head, angle and table coordinates for each machine position and for converting said preset coordinates into digital data;

means for transferring the digital data for each preset machine position into consecutive address locations in said memory means in a direct correspondence with consecutive settings of said adjustable program position display means such that said data storage memory means contains a multiplicity of programmed machine positions in a consecutive sequence with a first given number of machine positions representing a first cutting program and a second given number of machine positions a second cutting program, etc., thereby forming said multiple number of cutting programs;

means for selecting a predetermined cutting program from said multiple number of cutting programs;

means responsive to the selected program for generating command signals for each machine position within such selected program; and

manual input adjustable means for modifying the magnitude of each generated command signal for each of said head, angle and table coordinates respectively so as to accommodate for any variations in any of such coordinates.

4,280,183

GAS ANALYZER

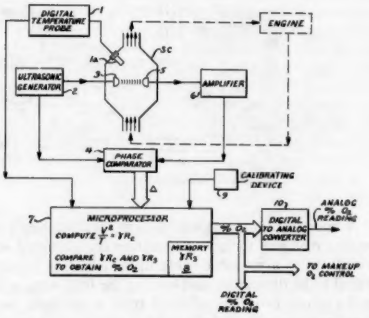
Giunio G. Santi, Milan, Italy, assignor to S.S.O.S. Sub Sea Oil Services S.p.A., Milan, Italy

Filed Jul. 30, 1979, Ser. No. 62,066
Claims priority, application Italy, Aug. 4, 1978, 26473 A/78; Feb. 9, 1979, 20059 A/79
Int. Cl.[3] G01N *29/02*
U.S. Cl. 364—497 **7 Claims**

1. A gas analyzer, particularly useful in connection with the supply of fuel to an engine of a submarine, which engine has a

fuel supply conduit through which flows an atmosphere comprising primarily oxygen gas and carbon dioxide gas, with or without satured steam, said analyzer immediately providing a signal indicative of the percent of that atmosphere made up by one of said gases, said analyzer comprising:

temperature test means, including a sensor in said conduit, for providing a signal T indicative of the temperature of said atmosphere;



sound velocity test means, having a portion thereof in said conduit, for providing a signal V indicative of the sound transmission velocity in said atmosphere; and

means connected to said test means to receive said signals therefrom, to calculate the value of the ratio V^2/T and to produce therefrom a signal indicative of the percentage of said one gas in said atmosphere.

4,280,184

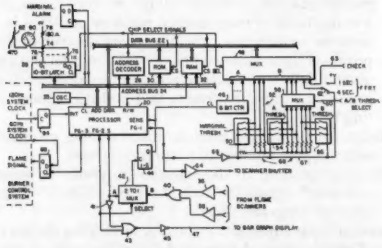
BURNER FLAME DETECTION

Nathan K. Weiner, Stoughton; Peter J. Weyman, Boston, and David D. Ketchum, Ipswich, all of Mass., assignors to Electronic Corporation of America, Cambridge, Mass.

Filed Jun. 26, 1979, Ser. No. 52,113

Int. Cl.³ G06F *15/20*; G08B *17/12*

U.S. Cl. 364—506 **37 Claims**



1. A method for providing a signal representative of the quality of a flame in a burner system of the type including a burner for producing a flame and a flame sensor responsive to the burner flame for providing signal pulses representative of the flame, the method comprising the steps of:

defining a series of successively-occurring time intervals;

counting the number of pulses produced by the flame sensor during each interval;

storing the number of pulses produced during each of a selected number of preceding intervals, the duration of said selected number of intervals defining a first period of time;

periodically determining the number of pulses produced during the preceding first period of time to define a total number equal to said number of pulses produced during the preceding first period of time;

comparing said total number with a threshold value to determine when said total number is below the threshold value and providing a signal representative thereof.

4,280,185

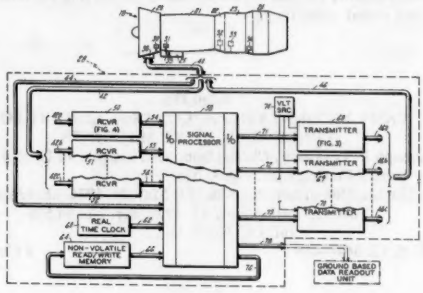
ENGINE MODULE LIFE TRACKING SYSTEM

Anthony N. Martin, Simsbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Aug. 6, 1979, Ser. No. 64,226

Int. Cl.³ G01M *15/00*

U.S. Cl. 364—506 **9 Claims**



1. A life tracking system (LTS) for automatically identifying and recording the instant configuration of a gas turbine engine by engine module type and serial number, comprising:

plurality of engine module identifier units, each disposed on an associated engine module, and each providing identification signal information definitive of the associated module type and serial number in response to interrogation signals presented thereto; and

a life tracking unit (LTU), including electronic signal processing means having memory means for storing signals, and including transmitting means and receiving means each connected for response to said processing means and to each of said module identifier units, said transmitting means providing the interrogation signals to each of said module identifier units, each provided in response to a related identifier unit command signal presented to said transmitting means from said processing means, said receiving means being responsive to said identification signal information from each module for providing a processor compatible signal manifestation of each to said processing means, said processing means storing each signal manifestation in said memory means at a location therein associated with the particular identifier unit providing the signal information corresponding to said signal manifestation.

4,280,186

EXPOSURE APPARATUS USING ELECTRON BEAMS

Yutaka Hidai, Kodaira, and Nobuo Okuda, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jun. 29, 1979, Ser. No. 53,215

Claims priority, application Japan, Jul. 7, 1978, 53-82095; Jul. 7, 1978, 53-82096; Nov. 27, 1978, 53-145312

Int. Cl.³ G06F *3/14*

U.S. Cl. 364—518 **10 Claims**

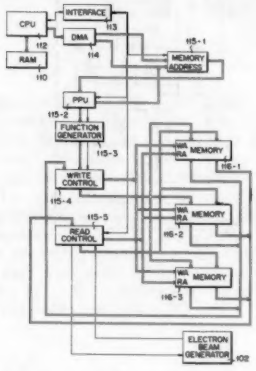
1. An exposure apparatus using an electron beam comprising:

first memory means for storing pattern parameters which are used to represent various basic patterns;

data processing means for reading out from said first mem-

ory means the pattern parameters which represent the basic patterns necessary for forming a pattern to be drawn;

dot pattern data generating means for receiving the pattern parameters read out through said data processing means to generate dot pattern data which correspond to the received pattern parameters, and including a bit pattern generating circuit for generating bit pattern data which correspond to a plurality of parallel lines passing a basic pattern, each bit pattern data containing line segment data representing that line segment of the corresponding parallel line which meets the sides of the basic pattern, a plurality of second memory means, a write control circuit for



sequentially writing into said plurality of second memory means the bit pattern data delivered from said bit pattern generating circuit, whereby each of said plurality of second memory means stores the pattern data required for forming a pattern in a different unit pattern area, and a read control circuit for reading the bit pattern data one after another from said plurality of second memory means; and

electron beam generating means for generating an electron beam according to the bit pattern data sequentially delivered from said plurality of second memory means to achieve a raster scanning on a predetermined region, using the electron beam.

4,280,187

METHOD AND APPARATUS FOR PINPOINTING THE CAUSES OF MALFUNCTION OF MACHINES FOR THE MANUFACTURE AND/OR PROCESSING OF CIGARETTES OR THE LIKE

Joachim Reuland, Neu Börnsen, and Rolf Dahlgrün, Schwarzenbek, both of Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

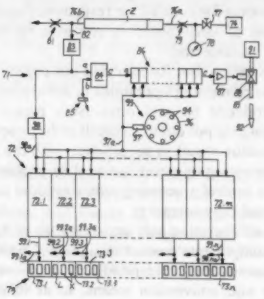
Filed Sep. 24, 1979, Ser. No. 78,073

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1978, 2842461

Int. Cl.³ G01D *5/56*

U.S. Cl. 364—552 **17 Claims**

1. A method of ascertaining those components, particularly conveyors, of a plurality of components of one or more machines for the production and/or processing of smokers' products which cause the production of defective products, comprising the steps of testing the products including generating test signals which are indicative of the condition of the respective products and include, at least at times, constituents which are characteristic of the influence of various components of the respective machine or machines upon the condition of tested products; evaluating said test signals to ascertain the presence or absence of said constituents; and utilizing the results of said evaluating step to automatically pinpoint those components which have caused the presence of corresponding constituents



in or the absence of corresponding constituents from the evaluated test signals.

4,280,188

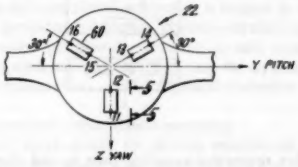
SURVIVABLE REDUNDANT VECTOR SENSORS FOR SYSTEMS WITH DIFFERING MAXIMUM OUTPUT REQUIREMENTS

Warren D. Weinstein, Huntington Station; Jean A. Boudreau, Commack, and Donald Gertz, Carle Place, all of N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.

Continuation of Ser. No. 950,375, Oct. 11, 1978, abandoned, and a continuation of Ser. No. 594,955, Jul. 11, 1975, abandoned. This application Jun. 28, 1979, Ser. No. 52,804

Int. Cl.³ G06F *15/50;* **G01C** *21/00*

U.S. Cl. 364—566 **29 Claims**



18. A vector sensing system for measuring triad rates or accelerations of an aircraft comprising six identical vector sensors, each sensor having a pre-determined input axis; means for mounting said sensors in said aircraft with their input axes arranged in a non-orthogonal relationship relative to one another and with their input axes defining the surface of a cone having its axis coincident with the axis of maximum input to the aircraft, said cone having a central half angle such that an average total amplification factor is minimum.

4,280,189

INPUT SIGNAL PROCESSOR USED IN ELECTRONIC ENGINE CONTROL APPARATUS

Masao Takato; Masumi Imai, both of Hitachi, and Toshio Furuhashi, Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 18, 1978, Ser. No. 952,275

Claims priority, application Japan, Oct. 19, 1977, 52-125978

Int. Cl.³ G06F *15/20;* **G05B** *15/02*

U.S. Cl. 364—734 **16 Claims**

1. In a control apparatus for an internal combustion engine having:

sensor means for monitoring operating conditions of the

engine and producing signals, including any ripple components, representative thereof;

conversion means for converting the signals produced by said sensor means into digital data representative thereof;

actuator means for controlling respective energy conversion functions of said engine in response to control signals applied thereto; and

a data processing unit for carrying out engine actuator control data processing operations in accordance with digital data produced by said conversion means and thereby generating output control signals to be coupled to control said actuator means in accordance with the results of said data processing operations, said data processing unit containing a central processing unit, a random access memory and a read only memory;

a method of operating said apparatus, so as to remove any ripple components present in signals X produced by said sensor means and correspondingly converted into digital data by said conversion means, so as to obtain filtered signals Y in response to which said data processing unit operates in carrying said engine actuator control data processing operations, comprising the steps of:

sampling the digital data produced by said conversion means at periodic instants in time t_i, to obtain for each sampling time a first digital signal sample X_i representative of the output of said actuator means including any ripple data for

750
TAKE IN INPUT VALUE X_i CORRESPONDING TO AIR-FLOW RATE AT INSTANT t_i FROM A/D CONVERTER
760
OBTAIN PREVIOUS INPUT SIGNALS $X_{n-(n-1)} \sim X_{i-1}$ FROM RAM
770
CALCULATE PRESENT FILTERED VALUE Y_i BY THE FOLLOWING EXPRESSION
$Y_i = \frac{\sum_{n-(n-1)}^{i} X_{n-(n-1)}}{N}$
780
SET THE RESULT Y_i IN AIR-FLOW RATE STORING AREA IN RAM

that respective sampling time t_i, and storing a physical record of said digital signal sample X_i in said random access memory;

storing in said random access memory a physical record of the results of a prescribed filtering process operation through which a filtered signal sample Y_i is derived by said central processing unit in response to said sample X_i and a previously-derived filtered sample Y_{i-1} for a digital signal sample X_{i-1} at sampling time t_{i-1};

applying a previously-derived and stored filtered sample Y_{i-1} and said first digital signal sample X_i from said random access memory to said central processing unit wherein a filtered signal sample Y_i for said sampling time t_i is obtained in accordance with a prescribed relationship between said digital signal sample X_i and said stored previously-derived filtered sample Y_{i-1} for the previous sampling time t_{i-1};

storing a physical record of said filtered signal sample Y_i in said random access memory;

generating output control signals by coupling said filter signal sample Y_i to said data processing unit in which engine actuator control data processing operations are carried out; and

causing said output control signals to be coupled to said actuator means whereby said respective energy conversion functions of said engine are controlled.

4,280,190

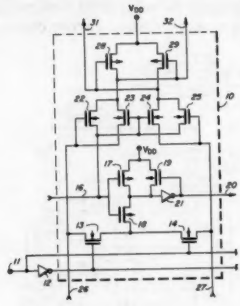
INCREMENTER/DECREMENTER CIRCUIT

Philip S. Smith, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 9, 1979, Ser. No. 65,295

Int. Cl.[3] **G06F** *7/50*

U.S. Cl. 364—770 **6 Claims**

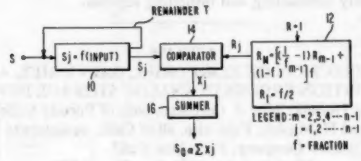


1. An incrementer/decrementer circuit, comprising: a first input for receiving a carry-in signal; a second input for receiving an increment input; a third input for receiving a decrement input; a fourth and a fifth input for receiving complementary inputs; a first and a second output for providing outputs for the incrementer/decrementer circuit; a third output for providing a carry-out output; a first and a second transistor coupled in series between the fourth and fifth inputs, the first transistor having a gate electrode coupled to the third input, the second transistor having a gate electrode coupled to the second input, the first and second transistors forming a first node therebetween; a third and fourth transistor coupled in series between the first node and a first power supply terminal, the third and fourth transistors forming a second node therebetween and having gate electrodes coupled to the first input; an inverter coupled between the second node and the third output; feedback means coupled to the inverter to form a latch with the inverter; a fifth and sixth transistor having a first and a second current carrying electrode and a gate electrode, the first electrode of the fifth and sixth transistor being coupled to the second output, the gate electrode of the fifth transistor being coupled to the fourth input, the gate electrode of the sixth transistor being coupled to the first input, the second electrode of the fifth transistor being coupled to the first input, the second electrode of the sixth transistor being coupled to the fourth input; seventh and eighth transistors having first electrodes coupled to the first output, and having second and gate electrodes, the gate electrode of the seventh transistor being coupled to the first input, the seventh transistor having its second electrode coupled to the fifth input, the gate electrode of the eighth transistor being coupled to the fifth input, the second electrode of the eighth transistor being coupled to the first input; and ninth and tenth transistors having first electrodes coupled to the first voltage terminal, the ninth transistor having a second electrode coupled to the second output and having a gate electrode coupled to the first output, the tenth transistor having a second electrode coupled to the first output and having a gate electrode coupled to the second output.

4,280,191
QUANTIZING CIRCUITS

Leonard R. Rockett, Jr., Cranbury, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 16, 1979, Ser. No. 30,513
Int. Cl.[3] G06G 7/00
U.S. Cl. 364—807 6 Claims



1. A quantizer comprising, in combination:

means for multiplying an input signal S by a positive fraction f which is less than unity to obtain a fractional signal $S_1 = fS$ and a remainder $T_1 = S(1-f)$ and for multiplying that remainder signal and all succeeding remainder signals $T_2 \ldots T_{n-1}$, each by the same fraction f, whereby successive fractional signals $S_1, S_2 \ldots S_n$ are obtained, where n is the number of quantizing levels desired;

means for producing successive threshold levels $R_1, R_2 \ldots R_{n-1}$, each concurrent with a corresponding fractional signal $S_1, S_2 \ldots S_{n-1}$, where R_j is the following function of the values of j and f, $R_1 = f/2$, and

$$R_m = \left[\left(\frac{1}{f} - 1 \right) R_{m-1} + (1-f)^{m-1} \right] f,$$

where $j = 1, 2 \ldots n-1$, and $m = 2, 3 \ldots n-1$;

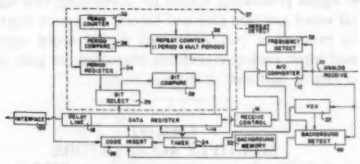
means for comparing each remainder signal S_j with a threshold level R_j to produce in each case an output X_j of one value when $S_j \geq R_j$ and output X_j of different value when $S_j < R_j$; and

means for producing and adding to one another a number of incremental signals of the same amplitude equal to the number of outputs X_j of said one value produced by said means for comparing.

4,280,192
MINIMUM SPACE DIGITAL STORAGE OF ANALOG INFORMATION

Edward W. Moll, 32 Woodstream Dr., Norristown, Pa. 19403

Continuation-in-part of Ser. No. 757,687, Jan. 7, 1977, abandoned. This application Jan. 2, 1979, Ser. No. 61
Int. Cl.[3] G06F 3/00; H03K 13/02
U.S. Cl. 364—900 16 Claims

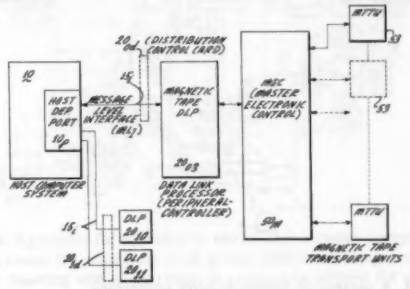


1. A system for minimizing the storage or transmission requirements of digital representation of analog signals comprising means for converting an analog signal to said digital representation, data register means for storing said digital representation at locations therein dependent upon the time related receipt of said analog signals, first means for detecting the complete absence of said analog signal, second means for detecting the duration of said absence of said analog signal, encoding means for receiving signals from said first and second means for detecting for encoding digital data relating to the absence of said analog signal and for inserting into said data register means in a time related location therein coded information corresponding to a start, time length, and end of the absence of said analog signal at a predetermined time after the end of the absence of said analog signal, and means for transferring said encoded data from said data register means to a storage means.

4,280,193
DATA LINK PROCESSOR FOR MAGNETIC TAPE DATA TRANSFER SYSTEM

Kenneth W. Baun, and Jimmy G. Saunders, both of El Toro, Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Dec. 14, 1979, Ser. No. 103,743
Int. Cl.[3] G06F 3/04, 3/06
U.S. Cl. 364—900 13 Claims



1. A peripheral-controller for operation in a system which includes a main host computer and a plurality of magnetic tape transport units, said peripheral controller is housed in a base module which provides distribution control circuitry to connect and disconnect peripheral controllers to said main host computer and maintenance circuitry to test the operation of such peripheral-controllers, said peripheral-controller comprising:

(a) common control circuit means including:

(a1) control store means for storing micro-code word operators, each of said word operators being separately addressable and selected by control data from a peripheral dependent circuit means;

(a2) means connected to generate a current-address to said control store means to select a first micro-code word operator, said generation means receiving control data from said peripheral dependent circuit means;

(a3) means to generate the next forthcoming micro-code word operator;

(a4) stack register means to temporarily hold the current address of said first micro-code word operator;

(a5) latching register means to temporarily store and convey said micro-word operator to said peripheral dependent circuit means for execution of said operator;

(a6) connection means to signal access-requests to said host computer;

(a7) bus means to receive data from and to transmit data to said main host computer;

(a8) additional bus means to receive data from and to transmit data to selected magnetic tape transport units;

(a9) RAM buffer means to temporarily store data being transferred between a selected magnetic tape transport unit and said host computer said buffer means being controlled by signals from said peripheral dependent circuit means;

(b) said peripheral dependent circuit means including:

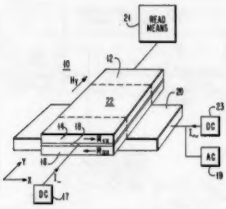
(b1) bi-directional data path means to a selected magnetic transport unit;
(b2) address logic means for formulating addresses for the read-out and write-in of data in said RAM buffer means;
(b3) multiplexor means for selecting a source of data that is to be transmitted to said RAM buffer means;
(b4) means to set a unique address to identify said peripheral dependent circuit means;
(b5) word generation shift register means to provide control and information data to said host computer and to a selected magnetic tape transport unit;
(b6) logic means for executing micro-code word operators received from said latching register means.

4,280,194

PARAMETRIC BUBBLE DETECTOR

Otto Voegeli, Morgan Hill, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 26, 1979, Ser. No. 97,451
Int. Cl.³ G11C *19/08*
U.S. Cl. 365—7 **8 Claims**



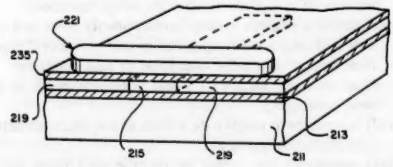
1. A parametric bubble detector comprising
a coupled film sensor strip, and
excitation means interacting over a limited area with said stripe wherein the passage of a periodically varying current in said excitation means produces a similarly periodic inductive output signal from said stripe having a waveform responsive to the present of a bubble domain proximal to said limited area.

4,280,195

PLANAR AND NEAR PLANAR MAGNETIC BUBBLE CIRCUITS

Donald K. Rose, Palo Alto, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 695,609, Jun. 14, 1976, Pat. No. 4,178,635. This application Jun. 11, 1979, Ser. No. 47,664
The portion of the term of this patent subsequent to Dec. 11, 1996, has been disclaimed.
Int. Cl.³ G11C *19/08*
U.S. Cl. 365—39 **6 Claims**



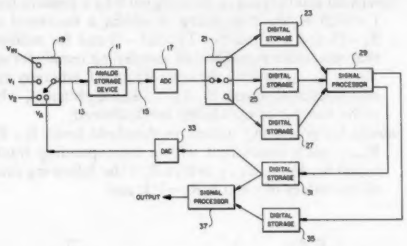
1. A magnetic bubble device comprising:
a substrate of magnetic material capable of sustaining magnetic bubble domains in the presence of a bias magnetic field;
a nominally electrically conducting layer on the substrate having regions of an electrically conducting material contiguous with insulating regions of the anodic oxide of said conducting material, said insulating regions having been formed by selective anodization of said nominally electrically conducting layer, so that said electrically conducting regions and said insulating regions have substantially co-planar top surfaces; and
magnetic bubble propagating means on said layer of electrically conducting and insulating regions.

4,280,196

CORRECTION OF ZERO DRIFT, GAIN DRIFT, AND DISTORTION ERRORS IN ANALOG STORAGE DEVICES

Thomas Hornak; John J. Corcoran, both of Portola Valley, and Samuel H. Maslak, Palo Alto, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 14, 1979, Ser. No. 94,007
Int. Cl.³ G11C *27/02, 19/28*
U.S. Cl. 365—45 **4 Claims**



1. A device for storing an input analog waveform and producing an output signal representing the input signal, said device comprising:
analog storage means for storing an input analog waveform;
input means for operating in a signal mode to input into said analog storage means, said input waveform to be stored, operating in a first reference mode to input a first reference waveform into said analog storage means, and operating in a second reference mode to input a second reference waveform into said analog storage means;
ADC means for converting the output of said analog storage means into a digital word;
first digital storage means for storing a signal digital word resulting from operation of said analog storage means and ADC means on said input analog waveform, a first reference digital word resulting from operation of said analog storage means and ADC means on said first reference waveform, and a second digital word resulting from operation of said analog storage means and ADC means on said second reference waveform;
first signal processing means for combining said signal digital word and said first and second reference digital words to produce a once-corrected digital word representing said input analog waveform corrected for gain and offset errors of said analog storage means.

4,280,197

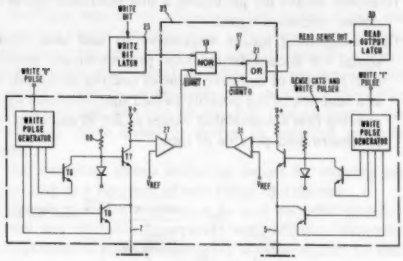
MULTIPLE ACCESS STORE

Eugene S. Schlig, Somers, N.Y., assignor to IBM Corporation, Armonk, N.Y.

Filed Dec. 7, 1979, Ser. No. 101,390
Int. Cl.³ G11C *13/00, 11/40*
U.S. Cl. 365—154 **24 Claims**

1. A multiple access memory cell, comprising:
flip-flop store means for operating in one switching state to store a binary one and for operating in another switching state to store a binary zero;

at least one pair of accessing transistors, each transistor having means for operating in a conducting state to pass a sense current to read a switching state of said flip-flop store means and at least one of said accessing transistors having means for operating in a saturation state in response to a write signal to define a particular switching state for said flip-flop store means;



mode select means for applying a write select voltage to said flip-flop store means to allow the flip-flop store means to change switching states in response to the saturation state of one of said accessing transistors and for applying a read select voltage to said flip-flop store means to prevent the flip-flop store means from changing switching states; and current supply means responsive to a word signal for supplying said sense current.

4,280,198

METHOD AND CIRCUIT ARRANGEMENT FOR CONTROLLING AN INTEGRATED SEMICONDUCTOR MEMORY

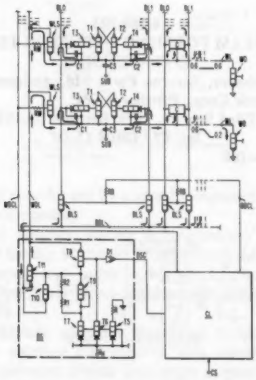
Klaus Heuber, Boeblingen, and Siegfried K. Wiedmann, Stuttgart, both of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 7, 1979, Ser. No. 101,366

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1978, 2855866

Int. Cl.³ G11C *11/40*

U.S. Cl. 365—203 **8 Claims**



1. In a method of controlling a semiconductor memory of arrayed memory cells including arrayed memory cells arranged in merged transistor logic with said cells coupled at intersections of word and bit lines and selected via word line drivers and decoders, the improvement residing in discharging the line capacitances for reducing the access time and power consumption of said memory cells, comprising the steps of,

discharging said line capacitance before cell selection by causing said line capacitances to discharge through line control means coupled to respective ones of the bit lines or word lines associated with each cell and then through a common control means common to all line control means.

4,280,199

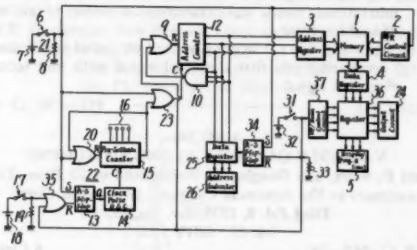
APPARATUS FOR SCANNING AN ADDRESSABLE MEMORY

Yoshio Osakabe, and Hiroshi Yasuda, both of Yokohama, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 3, 1979, Ser. No. 63,383

Int. Cl.³ G11C *8/00*; H03J *7/06*

U.S. Cl. 365—236 **15 Claims**



1. Apparatus for scanning an addressable memory comprising means for generating clock pulses; address counting means for counting said clock pulses to produce an address for said addressable memory; means for supplying said address to said addressable memory to desginate a corresponding storage location therein from which stored data is read; means for selectively enabling said clock pulse generating means to supply said clock pulses to said address counting means; scan advance means selectively operable to change the count of said address counting means by a predetermined amount in response to each operation thereof; and OR-gate means responsive to the operation of said scan advance means or to a generated clock pulse to change the count or said address counting means, and thereby change the designated storage location in said addressable memory.

4,280,200

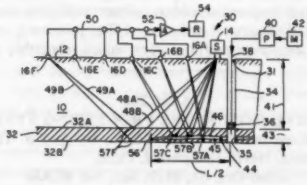
SEISMIC METHOD OF MAPPING HORIZONTAL FRACTURES IN THE EARTH

Daniel Silverman, 5969 S. Birmingham St., Tulsa, Okla. 74105

Filed May 21, 1979, Ser. No. 41,060

Int. Cl.³ G01V *1/24*

U.S. Cl. 367—37 **22 Claims**



1. In a shallow geological formation, a borehole drilled to said formation, a horizontal fracture in said shallow formation resulting from the prior application of pressurized fracturing fluid to said shallow formation through said borehole;

the method of mapping the shape and size of the outer perimeter of said fracture, comprising the steps of:

(a) providing a selected source of seismic waves at or below the surface of the earth at a selected position above said fracture;

(b) positioning at or near the surface of the earth at least a first sensor of seismic energy, at a known position with respect to said source, said sensor adapted to receive seismic energy generated at said source, and upwardly reflected by a reflecting interface close to said formation, and to convert said seismic energy to electrical signals;

(c) pressurizing said fracture with pressurizing fluid so that the roof of said fracture is lifted out of contact with the base of said fracture, said fracture volume filled with said pressurizing fluid;

(d) operating said source and receiving at said sensor seismic waves which have been reflected at a first reflection point, and recording a first electrical signal;

(e) depressurizing said fracture so that said roof is lowered into intimate elastic wave transmission contact to said base of said fracture;

(f) repeating step (d) to get a second electrical signal; and

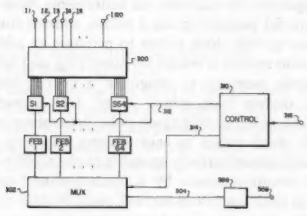
(g) comparing said first electrical signal with said second electrical signal.

4,280,201

VARIABLE GAP ROLL ALONG SWITCHING

Carl F. Mart, and Douglas B. Waits, both of El Paso, Tex., assignors to The Anaconda Company, Greenwich, Conn.

Filed Jul. 9, 1979, Ser. No. 55,554
Int. Cl.³ G01V *1/22*
U.S. Cl. 367—56 **6 Claims**



1. In a roll along geophysical prospecting system of the type having "m" geophone inputs, a smaller number "n" signal processing channels and a switching network for coupling "n" of said "m" geophone inputs to said "n" processing channels, an improved switching network comprising;

at least first and second sets of "m" switches, with one switch in each set having a first contact connected to said "m" geophone inputs respectively and with the switches of said first set having second contacts connected to said processing channels in a first repeated sequential order and the switches of the second set having second contacts—connected to said processing channels in a second repeated sequential order, where said first and second repeated sequential orders are offset relative to each other by an amount equal to a preselected selectable gap size.

4,280,202

DIGITAL HOMODYNE PROCESSING SYSTEM

Roger F. Koppelmann, Canton, Mich., assignor to The Bendix Corporation, North Hollywood, Calif.

Filed Oct. 31, 1979, Ser. No. 89,930
Int. Cl.³ G01S *15/02*
U.S. Cl. 367—87 **11 Claims**

1. A digital homodyne processing system for use in a sonar system which insonifies a volume of water, comprising:

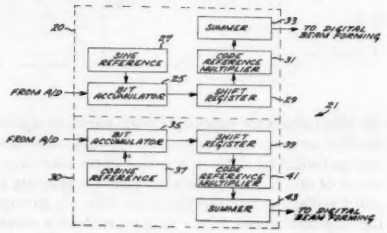
means for sensing pressure waves including sonar reflections in the isonified volume of water, and for providing a transducer output signal representative of the pressure waves detected by said sensing means;

filtering means for reducing the frequency and bandwidth of said transducer output signal for removing noise and non-useful signals to facilitate detection of sonar reflections, said filtering means providing a filtered output;

conversion means for providing a digital output signal representative of said filtered output;

reference means for providing a sine reference signal and a cosine reference signal;

first integrating means responsive to said sine reference signal for accumulating over predetermined periods of time positive or negative value of said digital output signal as a function of the polarity of said sine reference signal to provide first accumulated values at the termination of said predetermined periods of time;



second integrating means responsive to said cosine reference signal for accumulating over said predetermined periods of time positive or negative values of said digital output as a function of the polarity of said cosine reference signal to provide second accumulated values at the termination of said predetermined periods of time; and

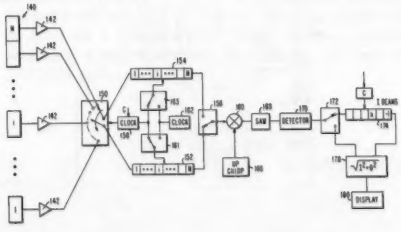
comparison means for storing separate respective sequences of said first accumulated values and said second accumulated values and for comparing said sequences against a predetermined code, said comparison means further providing a first output indicative of the comparison of said first sequence of accumulated values and a second output indicative of the comparison of said second sequence of accumulated values.

4,280,203

SONAR BEAM FORMING UTILIZING THE CHIRP Z-TRANSFORM

George A. Gilmour, Severna Park, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 14, 1979, Ser. No. 75,451
Int. Cl.³ G01S *15/04*
U.S. Cl. 367—103 **9 Claims**



1. Sonar beam forming apparatus for receiving acoustic returns from successive range increments of a target area to be examined as a result of acoustic transmissions sonifying said

area, and for forming multiple receiver beams for each said range increment, comprising:

(A) a transducer array including a plurality of active elements each operable to provide an output signal in response to said acoustic returns, the collective output signal of said array defining a spatial signal comprised of a plurality of spatial frequency components, each spatial frequency component being indicative of a different one of said receiver beams;

(B) encoding means for encoding said spatial signal and including means for providing a frequency chirp signal and means for converting said spatial signal to a corresponding temporal signal including a corresponding plurality of frequency components each indicative of a different one of said receiver beams, and mixing it with said frequency chirp signal to derive an encoded temporal signal;

(C) said encoding means including means for varying said encoding as a function of said range increments;

(D) decoding means responsive to said encoded temporal signal and operable to separate said different frequency components to provide a plurality of beam signals for each said range increment; and

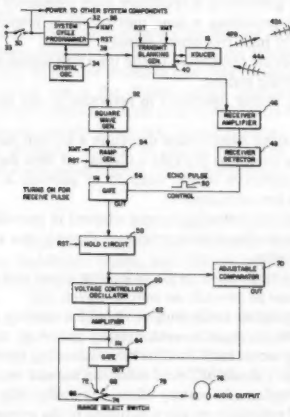
(E) means for processing and displaying said beam signals.

4,280,204

MOBILITY CANE FOR THE BLIND INCORPORATING ULTRASONIC OBSTACLE SENSING APPARATUS

Gilbert M. Elchinger, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Jun. 5, 1979, Ser. No. 45,783
Int. Cl.³ G01S *15/88*
U.S. Cl. 367—116 **11 Claims**



1. A mobility cane for use by a visually impaired person, said mobility cane comprising:

an elongated member, having a longitudinal axis, that is capable of having its said longitudinal axis maintained at a fairly constant acute angle with respect to the ground by the extended hand of an ambulatory visually impaired person; and

ultrasonic obstacle detection apparatus mounted on said elongated member for warning said visually impaired person of elevated objects that might impede ambulatory movement, whenever such objects enter a predetermined spatial zone having a maximum and minimum spatial zone depth, said detection apparatus including,

an adjustably mounted transmitting and receiving, capacitance type, electrostatic transducer having a particular ultrasonic energy transmission and reception pattern wherein said predetermined zone is a function of said pattern, and

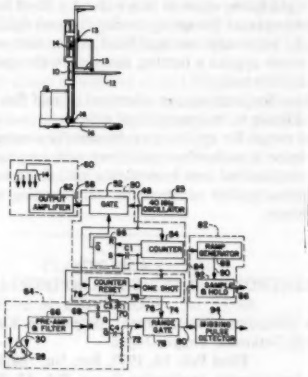
manually adjustable means for varying the depth of said predetermined zone to any one of a multiplicity of zone depths less than said maximum zone depth and greater than said minimum zone depth such that a portion of said spatial zone remains at a fixed distance from said transducer whenever said means is adjusted for the purpose of varying said spatial zone depth.

4,280,205

ULTRASONIC FORK HEIGHT MEASURING APPARATUS

Ned E. Dammeyer, New Bremen, Ohio, assignor to Crown Controls Corporation, New Bremen, Ohio

Filed Jul. 16, 1979, Ser. No. 57,772
Int. Cl.³ G01S *11/00*; B66B *3/02*
U.S. Cl. 367—119 **14 Claims**



1. A height measuring arrangement for a fork lift truck, having an extendable fork mast and forks mounted on said mast, for measuring the height of said forks and providing an electrical signal in response thereto, comprising:

electrical oscillator means for providing an ultrasonic signal,

transmitting ultrasonic transducer means, mounted in fixed position relative to said forks and responsive to said ultrasonic signal, for transmitting ultrasonic acoustic energy waves downward therefrom,

ultrasonic receiver means, mounted on said lift truck at a fixed height, for receiving said ultrasonic acoustic energy waves from said transmitting ultrasonic transducer means and for providing an electrical output signal in response thereto, said ultrasonic receiver means comprising:

an upward facing substantially parabolic reflector for reflecting upwardly said acoustic energy waves transmitted downward by said transmitting ultrasonic transducer means, and

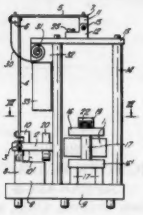
a downward facing receiving ultrasonic transducer for receiving acoustic energy waves reflected by said parabolic reflector and for providing an electrical output signal in response thereto,

whereby the time required for acoustic energy waves to travel from said transmitting ultrasonic transducer means to said receiving ultrasonic transducer via said parabolic reflector provides an indication of the height of said forks.

4,280,206
SEISMOMETERS

Cansun M. Guralp, Reading, England, assignor to National Research Development Corporation, London, England

Filed Mar. 14, 1979, Ser. No. 20,502
Claims priority, application United Kingdom, Mar. 15, 1978, 10276/78
Int. Cl.[3] G01V *1/18*
U.S. Cl. 367—179 8 Claims

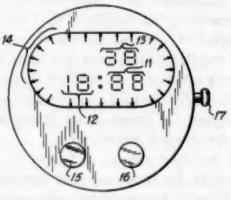


1. A vertical-component seismometer comprising:
a mass-carrying horizontally-extending boom pivoted to a rigid frame so as to move about a fixed horizontal axis;
a pre-stressed flat spring having one end rigidly connected to the boom adjacent said fixed axis so that movement of the boom applies a turning moment to the spring at said one end thereof;
means for locating the other end of said flat spring laterally relative to its longitudinal axis;
and means for applying a substantially constant compressive force at said other end along said longitudinal axis, said longitudinal axis intersecting said fixed axis so that said force applies substantially zero turning moment to the boom.

4,280,207
ELECTRONIC TIMEPIECE AND DIGITAL DISPLAY THEREFOR

Shuji Maezawa, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Feb. 14, 1977, Ser. No. 768,461
Claims priority, application Japan, Feb. 12, 1976, 51/14233
Int. Cl.[3] G04B *19/22*
U.S. Cl. 368—21 22 Claims

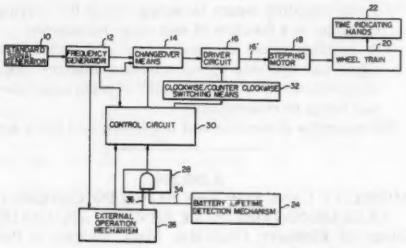


1. A digital display for an electronic timepiece, electronic timekeeping circuit means for producing timekeeping signals representative of actual time and a particular time zone, decoder and driver means for receiving said timekeeping signals and producing timekeeping driving signals and time zone driving signals, comprising in combination a plurality of numerical display digits for displaying time information in response to said timekeeping driving signals being applied thereto, a plurality of visual indication display segments peripherally disposed about said numerical display digits, each of said indication display segments being selectively rendered visually distinguishable in response to said time zone driving signal being applied thereto, a time zone corresponding to the time displayed by said numerical display digits and a plurality of indicia peripherally disposed about said visual indication display segments, each said indicia being associated with a visual indication display segment and identifying a particular time zone.

4,280,208
ELECTRONIC TIMEPIECE

Yasushi Nomura, Tokorozawa, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Jul. 24, 1978, Ser. No. 927,445
Claims priority, application Japan, Jul. 29, 1977, 52/90987; Aug. 16, 1977, 52/98108; Sep. 5, 1977, 52/106412; Sep. 12, 1977, 52/108765; Sep. 19, 1977, 52/112364
Int. Cl.[3] G04B *1/26*
U.S. Cl. 368—66 18 Claims



1. An electronic timepiece powered by a battery, comprising:
means for generating a relatively high frequency signal;
means for providing a time unit signal in response to the relatively high frequency signal;
a driver circuit responsive to the time unit signal to produce first driving pulses;
a stepping motor operative in response to the first driving pulses;
time indicating hand means driven in a normal mode by the stepping motor to provide a display of time data;
external operation means adapted to provide a switching signal when actuated;
battery lifetime detection means adapted to provide a detection signal when a battery voltage drops below a predetermined value;
gate means responsive to the switching signal and the detection signal to provide an output signal; and
means responsive to the output signal for causing the driver circuit to produce second driving pulses to actuate the stepping motor such that the time indicating hand means is driven in a mode different from the normal mode to provide a display of a battery lifetime warning only when the external operation means is actuated in the presence of the detection signal.

4,280,209
ELECTRONIC ALARM CLOCK

Jac A. Mooney, Great Neck, N.Y., assignor to Bradley Time Division, Elgin National, New York, N.Y.

Filed Jun. 7, 1978, Ser. No. 913,384
Int. Cl.[3] G04B *25/00, 19/00;* G04C *19/00*
U.S. Cl. 368—71 7 Claims

1. An electronic timepiece having an analog display produced by timekeeping hands representing hours and minutes and a concurrent digital display operating in conjunction with a digital setting system for activating an alarm at a preset time, said timepiece comprising:
A. a common high-frequency crystal-controlled time base;
B. a frequency converter in the form of a binary frequency

divider coupled to said time base to produce low-frequency timing pulses;

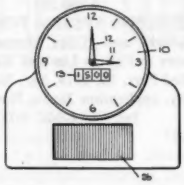
C. a motor responsive to the timing pulses to drive said timekeeping hands on a scale of 12;

D. an electro-optical display having at least four stations to provide readings of hours and minutes on a scale of 24;

E. a settable electronic actuator responsive to the timing pulses to produce digital values for concurrently actuating the digital display to provide digital time indications in synchronism with the analog display provided by the hands;

F. hour and minute setting switches operable to set the digital display to a selected wake-up alarm time;

G. a microprocessor coupled to said digital display actuator and having associated therewith a data memory operatively coupled to said switches for storing the digital value of a selected alarm setting, said microprocessor comparing the changing digital values from said digital display actuator corresponding to existing time with the stored value to produce a representative output signal when these values are coincident;



H. means responsive to said output signal to generate an alarm; and

I. a synthesized sound memory for storing in digitized form different musical sounds related to the respective hours of the day which are stored in said data memory, said microprocessor when the digital values representing existing times are coincident with said stored hours extracting said digitized sounds from said sound memory and applying said digitized sounds to digital-to-analog converter to produce musical sounds which are reproduced.

4,280,210

ELECTRONIC ALARM TIMEPIECE

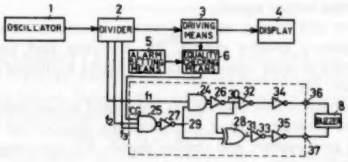
Yasuhiko Nishikubo, Iruma, and Mitsuo Sekine, Tokorozawa, both of Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Oct. 3, 1978, Ser. No. 948,633

Claims priority, application Japan, Oct. 3, 1977, 52/133025[U]; Dec. 14, 1977, 52/150010

Int. Cl.[3] G04B *23/02*; G04C *21/16*

U.S. Cl. 368—73 **2 Claims**



1. An electronic alarm timepiece comprising:

quartz crystal oscillator means for producing a time standard signal;

frequency divider means connected to said quartz crystal oscillator means for dividing the frequency of an output signal from said quartz crystal oscillator means for producing a plurality of signals, each of said signals being different in frequency;

driving means connected to said frequency divider means for producing a display driving signal;

display means driven by said display driving signal for indicating a display time;

alarm setting means for setting the alarm on said alarm timepiece;

comparing means responsive to an output signal from said alarm setting means and from said driving means for comparing the setting on said alarm setting means with the displayed time on said display means and for producing an alarm gate control signal when the displayed time coincides with the setting on said alarm setting means;

alarm driving means made in the form of a CMOS integrated circuit, said alarm driving means including:

means responsive to said alarm gate control signal for producing an alarm control signal having two modes of signals,

first gate means responsive to the output signals from said frequency divider means and to one mode of said alarm control signal for producing a first alarm signal,

second gate means responsive to the one mode of said alarm control signal and said first alarm signal for producing a second alarm signal having a phase which is opposite to the phase of said first alarm signal,

said first and second gate means being arranged to produce in-phase signals in response to another mode of said alarm control signal,

driving inverters responsive to said first and second alarm signal and to said in-phase signals for producing opposed-phase alarm driving signals and in-phase ineffective signals respectively; and

alarm means responsive to said opposed-phase alarm driving signals for producing an alarm sound, said alarm means being non-responsive to said in-phase ineffective signals.

4,280,211

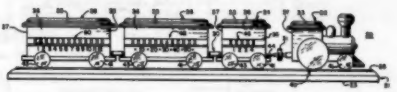
CLOCK APPARATUS

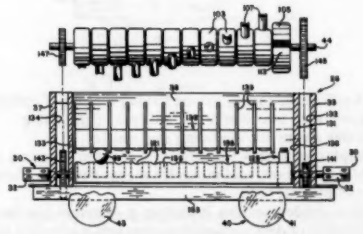
Harley Mayenschein, P.O. Box 117, Sextonville, Wis. 53584

Filed May 25, 1979, Ser. No. 42,566

Int. Cl.[3] G04B *19/00*; G04C *21/00*; G04B *25/00*; G04C *17/00*

U.S. Cl. 368—76 **25 Claims**





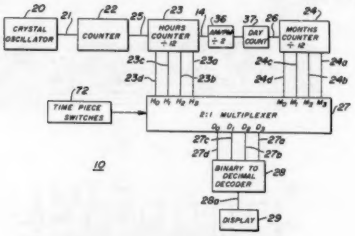
1. A clock apparatus including in combination housing enclosure means having outer wall portions defining selected aligned groups of apertures therein, time of date indicia associated with said groups of apertures and providing time-indicating references relative to the positions of said apertures, a plurality of moveable spheroids, timing source means, rotat-

able drive shaft means mounted in the housing enclosure means, coupling means for coupling the drive shaft means to the timing source means for providing predetermined time-referenced motion to the rotatable drive shaft means, cam means mounted in time-referenced angular loading positions on the rotatable drive shaft means, first spheroid holder means comprising chute assembly means for receiving and storing spheroids thereon in positional relationship corresponding to the selected aligned groups of apertures, second spheroid holder means comprising spheroid display means pivotable between first and second positions and positioned intermediately of and adjacent to the chute assembly means and the selected groups of apertures, said first position of the spheroid display means being aligned to receive spheroids thereon for framed display within the groups of apertures, respectively, and the second position thereof being aligned to depart spheroids therefrom for return to the chute assembly means, cam follower means mounted on the spheroid display means for biasing said spheroid display means to remain in the first position thereof in response to a selected time-referenced loading angular position of the cam means, said cam follower means being responsive to the rotational movement of said cam means to selectively allow for releasing the pivotable spheroid display means from said first position so that it pivots to the second position thereof, and said spheroids being selectively moved into framed display position on the spheroid display means in response to the driven movement of the cam means mounted on the rotatable drive shaft means, and thereafter being selectively removed therefrom when said cam follower means allows for the selective pivoting of the spheroid display means to the second position thereof whereby the spheroids are indicative of attained time of day.

4,280,212
MULTIPLEXING SYSTEM FOR A SOLID STATE TIMING DEVICE

Stephen A. Ransom, Huntingdon Valley; Jere W. Hohmann, Doylestown, and Clement Nahmias, Ardmore, all of Pa., assignors to Solid State Scientific, Inc., Montgomeryville, Pa.

Filed Aug. 15, 1979, Ser. No. 66,636
Int. Cl.[3] G04C *19/00;* **H03K** *3/01;* **G08B** *5/22*
U.S. Cl. 368—82 **10 Claims**



1. A solid state timing device having a chain of counters for displaying time information on a display comprising

decoder means for operating said display,

multiplexing means for coupling selected counters to said decoder means, said multiplex means having a plurality of multiplex sections,

each multiplex section including a common bus having a plurality of data transmission channels, a plurality of MOS devices of only a first type forming each of said channels, a complementary MOS device of a second type coupled to said common bus providing a complementary function with respect to said first type of MOS devices to establish predetermined operating voltage levels of the bus for the logic states,

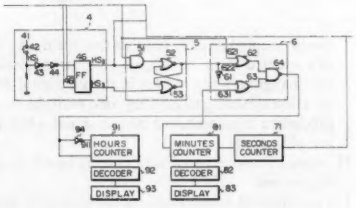
means providing each multiplex section a first reference potential coupled to each of said channels and a second reference potential coupled to said complementary MOS device whereby said complementary MOS device operates as a low impedance pull-up resistor between said common bus and said second reference potential, and

signalling means having a substantially short duty cycle coupled to a switching terminal of said complementary MOS device of each multiplex section for turning on said device and establishing for a substantially short period of time a predetermined operating voltage level on said common bus of substantially (1) said first reference potential when all the MOS devices of any channel are turned on and (2) said second reference potential when less than all the MOS devices of any channel are turned on.

4,280,213
QUICK FEEDING SYSTEM FOR A COUNTER

Masayuki Takahashi, and Hideo Monma, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 15, 1979, Ser. No. 94,435
Claims priority, application Japan, Nov. 17, 1978, 53-142532
Int. Cl.[3] G04C *9/00*
U.S. Cl. 368—187 **3 Claims**



1. A counting system comprising:

an oscillator circuit for generating an oscillation signal;

a frequency divider circuit, operatively connected to said oscillator circuit, for receiving said oscillation signal and for generating first and second frequency divided signals;

a quick-feed input circuit, having a switch, for generating first and second output signals in dependence upon the actuation of said switch;

a quick-feed pulse generator circuit, operatively connected to said frequency divider circuit and said quick-feed input circuit, for receiving said first output signal and said second frequency divided signal and for generating a quick-feed pulse signal;

a switching time control circuit, operatively connected to said quick-feed input circuit and said quick-feed pulse generator circuit, for providing a control signal in dependence upon said quick-feed pulse signal and said first and second output signals;

counter and display means, operatively connected to said frequency divider circuit, for receiving said first frequency divided signal and for generating a counted output signal; and

a switching circuit, operatively connected to said quick-feed pulse generator circuit, said switching time control circuit and said counter and display means, for providing, as a switching output signal to said counter and display means, either said quick-feed pulse signal or said counted output signal in dependence upon said control signal;

said switching circuit providing said quick-feed pulse signal a predetermined constant time after the closing of said switch in said quick-feed input circuit;

said counter and display means for counting said first frequency divided signal and said switching output signal and for displaying the counted result.

4,280,214

WRIST WATCH

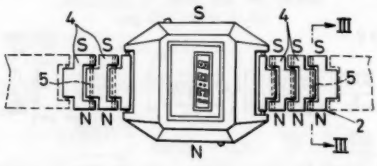
Shusaku Kunii, 39-36, Nishishinjuku 4-chome, Shinjuku-ku, Tokyo, and Hitoshi Hirano, 2485, Sakaecho, Kodaira-shi, Tokyo, both of Japan

Filed Nov. 22, 1978, Ser. No. 962,972

Claims priority, application Japan, Nov. 28, 1977, 52-159425[U]

Int. Cl.³ G04B 37/00

U.S. Cl. 368—282 5 Claims



1. In a wrist watch comprising

a watch apparatus, of a type operable independent of magnetic fields, for keeping and indicating the time;

a hollow watch body housing said watch apparatus therewithin and having a rear cover for facing the wrist of the wearer;

a watch band attached to said watch body for securing the watch to the wrist of the wearer such that said rear cover and band engage and circumferentially surround said wrist;

the improvement comprised in that

the watch apparatus is of a conventional digital type capable of operation in a magnetic field;

at least one of said rear cover and watch band incorporating, in operatively fixed location thereon, portions of magnetizable material magnetized to form permanent magnets each having an N-pole and an S-pole, said magnetized material being distributed substantially over the whole circumferential width of said at least one of said rear cover and watch band, there being more than one said permanent magnet, adjacent said permanent magnets lying with their lengths substantially parallel, all of said permanent magnets having their magnetic fields aimed in the same direction and substantially perpendicular to the circumferential direction of said rear cover and watch band, the N-pole of each said permanent magnet being spaced from and free of contact with the S-pole of any other said permanent magnet, said rear cover and watch band being free of closed magnetic circuits through magnetizable material from the N-pole of any permanent magnet to the S-pole of the same permanent magnet, the array of said permanent magnets covering a portion of the wrist of the wearer, which portion has a circumferential width at least as great as the circumferential width of said rear cover.

4,280,215

FOCUSSING LENS SERVO DRIVING DEVICE FOR OPTICAL INFORMATION READING DEVICE

Takashi Okano, Tokorozawa, Japan, assignor to Universal Pioneer Corporation, Tokyo, Japan

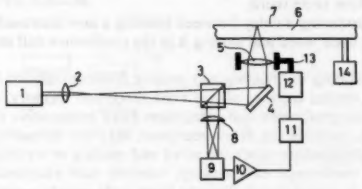
Filed Sep. 7, 1979, Ser. No. 73,476

Claims priority, application Japan, Sep. 7, 1978, 53-109899

Int. Cl.³ G11B 7/00

U.S. Cl. 369—45 5 Claims

1. A servo focussing means in an optical information reading device, said optical reading device including a focussing lens movable between a first position and a second position in a direction perpendicular to an information recording surface of a recording medium, said servo focussing means controlling the movement of said focussing lens to focus light on said information recording surface, the improvement comprising: means for driving said focussing lens in a direction from said first position toward said second position, position detecting means for detecting a position of said focussing lens as said focussing lens is moved past a predetermined position by said driving means, said predetermined position being closer to said second position than a lens position corresponding to the distance between said lens and said recording surface when said light is focussed on said information recording surface, means for producing a predetermined control signal is response to said detecting means for the period of time during which said



lens is moved past said predetermined position, opposition force generating means for applying an opposition force to said focussing lens in a direction opposite to said driving direction, said opposition force being gradually decreased during a period of time of generation of said predetermined control signal, and means for providing an instruction signal for closing a servo loop of said servo focussing means at the end of generation of said predetermined control signal, said means for providing an instruction preventing any further output from said opposition force generating means when said servo loop is in operation.

4,280,216

METHOD OF MAKING CONFERENCE CALL CONNECTIONS IN A MULTIPLEX SWITCHING SYSTEM

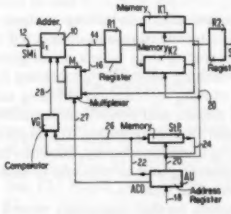
Rolf Zeitrag, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 12, 1979, Ser. No. 19,705

Claims priority, application Fed. Rep. of Germany, Mar. 16, 1978, 2811466

Int. Cl.³ H04M 3/56

U.S. Cl. 370—62 5 Claims



1. A method for completing conference call connections in a PCM division multiplex switching system having successive pulse frames each separated into plural time slots, comprising the steps of:

(a) forming an intermediate sum code word by adding code words received from subscribers to a conference call during their respective time slots,

(b) storing said intermediate sum code word by writing it into a first section of a conference call memory,

(c) reading out the intermediate sum code word from the

conference call memory for each time slot of a conference call subscriber,

(d) storing the total sum code word in a second section of said conference call memory, said total sum code word representing the sum of all of the subscriber code words received during the previous pulse frame,

(e) reading out said total sum code word during the time slots assigned to subscribers of the conference call,

(f) interchanging the functions of said first and second memory sections during alternate pulse frames,

(g) introducing a delay between the reading out of an intermediate sum code word and formation of a new intermediate sum code word,

(h) introducing a delay between forming a new intermediate sum code word and storing it in the conference call memory,

(i) separating the reading and writing functions of said first and second sections of said conference call memory, and

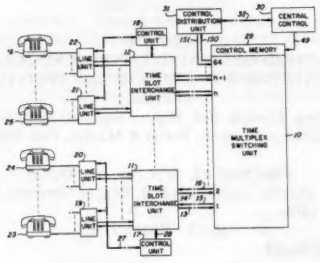
(j) when conference call subscribers have consecutive time slots, omitting the delay interposed between formation of an intermediate sum code word and reading or writing of said conference call memory, whereby said intermediate sum is accumulated directly from code words received during consecutive time slots.

4,280,217

TIME DIVISION SWITCHING SYSTEM CONTROL ARRANGEMENT

Edward H. Hafer, Winfield, and William J. Klinger, Warrenville, both of Ill., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 26, 1979, Ser. No. 106,392
Int. Cl.³ H04Q *11/04*
U.S. Cl. 370—63 **13 Claims**



1. A telecommunication switching system comprising a switching means, a terminating unit connected to said switching means for generating data words, an originating unit connected to said switching means for generating data words and for transmitting routing information defining said terminating unit to a control means, said control means comprising means for controlling said switching means to complete a communication path, having a unique identity, between said originating unit and said terminating unit in response to said routing information characterized in that

said control means further comprises means responsive to said routing information from said originating unit for transmitting to said terminating unit a control message identifying said originating unit and further identifying said communication path;

said terminating unit further comprises terminating unit transmission means for transmitting to said originating unit a control message defining the identity of said communication path and first communication means for transmitting and receiving said data words on said uniquely defined communication path; and

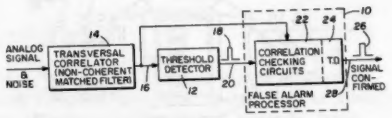
said originating unit further comprises second communication means responsive to said control message from said terminating unit for transmitting and receiving said data words on said communication path.

4,280,218

FALSE ALARM PROCESSOR

Robert S. Gordy, Williamsville, N.Y.; Billy R. Poston, and David E. Sanders, both of St. Petersburg, Fla., assignors to E-Systems, Inc., Dallas, Tex.

Filed Aug. 8, 1979, Ser. No. 64,845
Int. Cl.³ H04B *15/00*; G06F *11/00*
U.S. Cl. 371—6 **18 Claims**



1. A circuit for processing an input signal represented by pulse signals, comprising in combination:

channel selection means responsive to a pulse signal and generating a channel assignment signal,

a plurality of checking channels receiving an assignment signal from said channel selection means and generating a confirmation signal, each of said checking channels including:

enable means for receiving the assignment signal and generating an enable signal for a selected checking channel,

a blanking generator responsive to the enable signal to apply a blanking pulse to said channel selection means to disable said channel selection means from generating a second channel assignment signal for the same pulse signal, and

means responsive to the blanking pulse to sample the input signal at specific intervals and generating a confirmed signal for a valid input, and

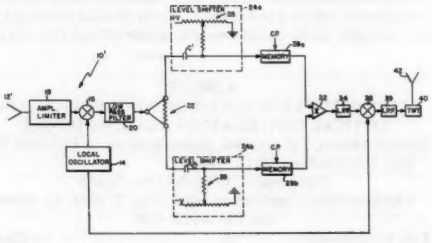
means responsive to the confirmed signal generated at any one channel to gate the confirmed signal to an output line.

4,280,219

DIGITAL MEMORY SYSTEM

Oscar Lowenschuss, Goleta, and Bruce E. Gordon, Santa Barbara, both of Calif., assignors to Raytheon Company, Lexington, Mass.

Filed Sep. 19, 1979, Ser. No. 77,231
Int. Cl.³ H04B *7/15*
U.S. Cl. 375—4 **3 Claims**



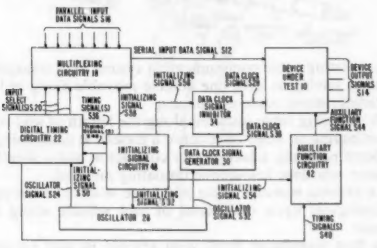
2. A digital memory system comprising:

(a) means for producing an input sinusoidal signal having a predetermined average level;

(b) means, responsive to the input sinusoidal signal, for producing a periodic signal having an amplitude periodically greater than the predetermined level of the input

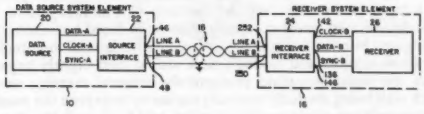
sinusoidal signal for periods of time different from half the period of the sinusoidal input signal;
(c) means for storing one bit samples representative of the amplitude of such periodic signal; and
(d) means for reconstructing the input signal from the one bit samples stored in the storing means.

4,280,220
ELECTRONIC TESTING SYSTEM
Theodore A. Vaeches, San Jose, Calif., assignor to Fairchild Camera & Instrument Corp., Mountain View, Calif.
Filed Sep. 17, 1979, Ser. No. 75,916
Int. Cl.³ G06F *11/00*
U.S. Cl. 371—27 **9 Claims**



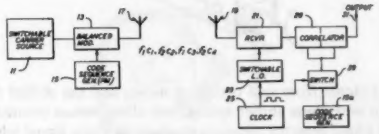
1. An electronic system for testing an electronic device responsive to a data clock signal and to a serial input data signal synchronous with the data clock signal, said system comprising:
oscillating means for repetitively generating oscillator pulses at a first selected repetition period;
data clock signal generating means responsive to the oscillator pulses for producing the data clock signal which comprises a series of data clock pulses at a second selected repetition period;
timing means for counting the oscillator pulses and for generating at least two input select signals indicative of the number of oscillator pulses counted, each input select signal being generated on a separate input select line; and
multiplexing means for receiving at least two parallel input data signals and for sequentially selecting each of the parallel input data signals in response to the input select signals provided thereto on the input select lines to generate the serial input data signal.

4,280,221
DIGITAL DATA COMMUNICATION SYSTEM
Randall K. B. Chun, Renton, and Donn E. Larsen, Bellevue, both of Wash., assignors to The Boeing Company, Seattle, Wash.
Filed May 31, 1979, Ser. No. 44,287
Int. Cl.³ H04L *3/00*; H04B *3/36*
U.S. Cl. 375—17 **20 Claims**



1. A digital data communication system for transferring digital information from a source to one or more receivers, comprising: source interface means for receiving digital signals generated by the source and producing encoded digital signals while controlling their rise and fall times on the basis of two source generated signal frequencies; receiver interface means for decoding said encoded digital signals into digital signals representative of said source generated digital signals for presentation to a receiver; and bus means operatively associated with said source interface means and said receiver interface means for transferring said encoded digital signals from said source interface means to said receiver interface means.

4,280,222
RECEIVER AND CORRELATOR SWITCHING METHOD
Robert A. Flower, White Plains, N.Y., assignor to The Singer Company, Little Falls, N.J.
Filed Jan. 14, 1980, Ser. No. 112,028
Int. Cl.³ H04K *1/02*; H03K *3/84*
U.S. Cl. 375—38 **4 Claims**

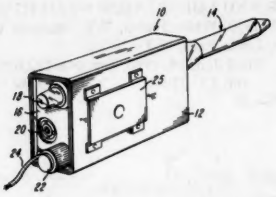


3. An improved communication system including a receiver correlator arrangement for receiving and correlating a plurality of pulses transmitted at two different frequencies comprising:
(a) a receiver including a switchable local oscillator for switching said receiver between said two frequencies;
(b) clock means for controlling said switchable local oscillator;
(c) a two section correlator receiving an input from said receiver;
(d) a first code sequence generating means generating and storing each of the codes to be received by said correlator; and
(e) switching means receiving an input from said clock for providing as reference inputs to said correlator sections each of the codes which are known to be transmitted at the frequency to which the receiver is then switched; and including a transmitter arrangement for transmitting the plurality of pulses at the two different frequencies comprising:
(a) a balanced modulator having an output for transmission of the pulses to the receiver at the two different frequencies;
(b) a switchable carrier source for switching between said two frequencies and for providing an input to said balanced modulator; and
(c) a second code sequence generating means adapted to be synchronized to said first code sequence generating means for providing an input to said balanced modulator.

4,280,223
RADAR DETECTOR
Donald L. Roettele, and William E. Yohpe, both of Dayton, Ohio, assignors to ComGeneral Corporation, Dayton, Ohio
Continuation of Ser. No. 777,311, Mar. 14, 1977, abandoned.
This application Sep. 13, 1979, Ser. No. 75,016
Int. Cl.³ H04B *1/00*; H03D *1/00*
U.S. Cl. 375—93 **11 Claims**

1. An improved radar detector comprising a housing, an elongated tubular waveguide disposed within said housing, an elongated dielectric antenna having a first tapered portion projecting into said waveguide for matching the impedances of said antenna and said waveguide, said antenna having a second portion projecting outwardly from said housing for collecting radar signals, said second portion of said dielectric antenna includes a first frusto-conical portion and a second frusto-conical portion connected by an elongated substantially cylindrical portion, means for detecting radar signals received within said waveguide, oscillator means, modulator means for receiving a reference signal from said oscillator means and in response

modulating the radar signals detected by said detecting means, means for amplifying the signals detected by said detecting means, phase shifter means for receiving the amplified signals from said amplifying means and for shifting the phase of the amplified signals, phase detector means for receiving the reference signal from said oscillator means and the shifted signals from said phase shifter means, and alarm means connected to said phase detector means to produce an alarm signal when the reference and shifted signals received by said phase detector means are synchronous in frequency and have a predetermined phase relation.



4,280,224

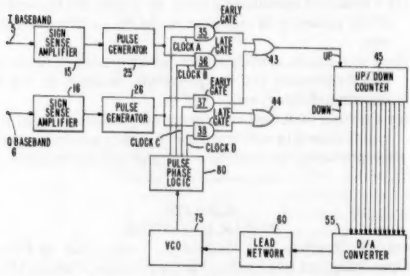
BIT SYNCHRONIZER WITH EARLY AND LATE GATING

Frank Chethik, Palo Alto, Calif., assignor to Ford Aerospace & Communications Corporation, Detroit, Mich.

Filed Jun. 21, 1979, Ser. No. 50,566

Int. Cl.[3] H04L *5/22;* **H03K** *5/00*

U.S. Cl. 375—116 **9 Claims**



1. Apparatus for synchronizing an input antipodal data bit stream having a bit period and having crossings about a reference axis, comprising:

means for statistically estimating the mean crossing with respect to time of said input data stream;

means for generating an early gate for each bit period whose on-duration is a predetermined percentage of said bit period, said early gate embracing crossings that occur just before said mean crossing and a late gate for each bit period whose on-duration is a predetermined percentage of said bit period, said late gate embracing crossings which occur just after said mean crossing; and

means for changing the frequency of said gates in response to the frequency of said input data stream.

4,280,225

COMMUNICATION SYSTEMS FOR TRANSPORTATION UNDERTAKINGS

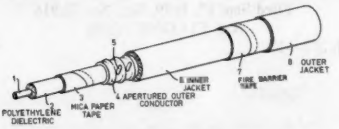
Arthur J. Willis, Wirral, England, assignor to BICC Limited, London, England

Continuation-in-part of Ser. No. 931,990, Aug. 8, 1978, abandoned. This application Nov. 8, 1979, Ser. No. 92,641

Claims priority, application United Kingdom, Aug. 24, 1977, 35473/77; Dec. 2, 1977, 50309/77

Int. Cl.[3] H04B *3/60;* **H01B** *7/18, 11/18;* **H01Q** *13/20*

U.S. Cl. 455—55 **5 Claims**



1. A radiating cable communication system for a transportation utility having at least one vehicle movable along at least one predetermined route comprising

(a) A radiating cable installed along the length of said route and having an inner conductor; a dielectric comprising an alkene polymer; a leaky outer conductor; and a sheath of flame retardant low-smoke insulating material.

(b) an antenna movable along said route relative to said cable consequent upon movement of said vehicle along said route

(c) a first transducer fixed with respect to said radiating cable and coupled to it

(d) a second transducer fixed with respect to said antenna and coupled to it; at least one of said first transducer and said second transducer being a transmitter supplying a signal with a frequency in the range 30–460 MHz and at least the other of said first transducer and said second transducer being a receiver responsive to said signal,

distinguished by the presence on the outer surface of said dielectric of a layer of mica paper tape.

4,280,226

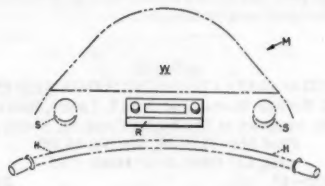
PROTECTIVE COVER FOR THE FACE PLATE OF A MOTORCYCLE-TYPE RADIO

Joseph E. Jenkins, 209 13th St., Pawnee, Ill. 62558

Filed Sep. 25, 1978, Ser. No. 945,448

Int. Cl.[3] B62J *23/00*

U.S. Cl. 455—345 **4 Claims**



1. A protective cover for and combined with the face-plate of a radio mounted to face the operator of a motorcycle or a like device, said cover comprising: an open-faced horizontally elongated box rectangular in vertical and horizontal longitudinal cross-sections and having a back wall at least slightly larger than the radio face-plate protectively covered thereby, said back wall being medially partially cut-away to expose the usual station-selector window of said radio, said back wall also having apertures for relatively close-fitting reception of the usual threaded bearing-sleeves for the usual radio-control shafts, which sleeves plus the usual co-operating nuts normally clamp said radio face-plate to the front surface of said radio, said open-faced box being attached to said radio by having its back wall clamped between the front of the radio proper and its face-plate by the co-operating nuts, and a moveable closure member positionable over the open face of said open-faced box for completely covering and protecting said radio face plate.

259,895
MATERNITY DRESS
Verna G. Hager, Box 914, Conrad, Mont. 59425
Filed Mar. 26, 1979, Ser. No. 24,274
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—131

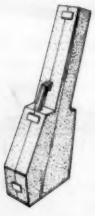
259,896
BELT BUCKLE
Ryk Van Brouwer, Los Angeles, Calif., assignor to Raintree Buckle & Jewelry, Inc., Los Angeles, Calif.
Filed Aug. 7, 1979, Ser. No. 64,411
Term of patent 14 years
Int. Cl. D02—*07*
U.S. Cl. D2—440

259,897
BELT BUCKLE
Ryk Van Brouwer, Los Angeles, Calif., assignor to Raintree Buckle & Jewelry, Inc., Los Angeles, Calif.
Filed Aug. 7, 1979, Ser. No. 64,418
Term of patent 14 years
Int. Cl. D02—*07*
U.S. Cl. D2—440

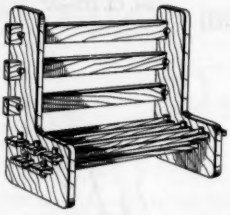
259,898
BELT BUCKLE
Ryk Van Brouwer, Los Angeles, Calif., assignor to Raintree Buckle & Jewelry, Inc., Los Angeles, Calif.
Filed Aug. 7, 1979, Ser. No. 64,419
Term of patent 14 years
Int. Cl. D02—*07*
U.S. Cl. D2—440

259,899
BELT BUCKLE
Ryk Van Brouwer, Los Angeles, Calif., assignor to Raintree Buckle & Jewelry, Inc., Los Angeles, Calif.
Filed Aug. 7, 1979, Ser. No. 64,420
Term of patent 14 years
Int. Cl. D02—*07*
U.S. Cl. D2—440

259,900
MUSICAL INSTRUMENT CASE
Jacques, 2233 Park Ave., Cincinnati, Ohio 45206
Filed May 31, 1979, Ser. No. 44,203
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—30



259,901
CHILD'S BENCH
Michael E. Herbert, Sr., 4129 Lake Sherwood Ave. East, Baton Rouge, La. 70816
Filed Aug. 15, 1978, Ser. No. 933,772
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—7

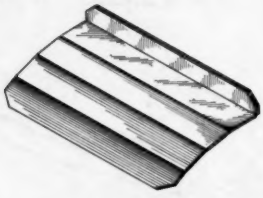


259,902
BEAD-FILLED CHAIR
Garland H. Rock, Midlothian, Va., assignor to Dart Industries Inc., Los Angeles, Calif.
Filed Apr. 19, 1979, Ser. No. 31,646
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—37

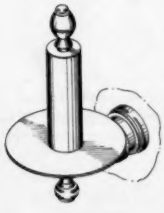
259,903
STOOL
Rosalyn G. Sidewater, 200 Central Park South, #30B, New York, N.Y. 10019
Filed Nov. 6, 1978, Ser. No. 957,998
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—74

259,904
PORTABLE WORK TABLE
Joseph S. Ng, Montebello, and William F. Sommers, Pasadena, both of Calif., assignors to Joseph J. Muscolino, Inc., Arcadia, Calif.
Filed Nov. 6, 1978, Ser. No. 958,105
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—85

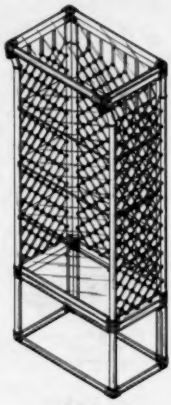
259,905
SPLASH SHIELD FOR RECESSED SOAP HOLDERS
Harold G. Bell, 1511 South St., Allentown, Pa. 18102
Filed Jul. 16, 1979, Ser. No. 57,839
Term of patent 7 years
Int. Cl. D23—*02*
U.S. Cl. D6—86



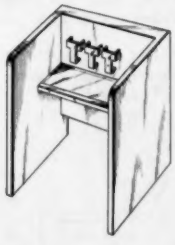
259,906
ROLLED PAPER HOLDER
Gary A. Fleischmann, Sheboygan, Wis., and Lawrence C. Peabody, Rindge, N.H., assignors to Kohler Co., Kohler, Wis.
Filed Apr. 10, 1980, Ser. No. 138,832
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D6—97



259,907
ETAGERE
Robert K. Thorpe, Newport Beach, Calif., assignor to The Charlton Company, Compton, Calif.
Continuation-in-part of Ser. No. 863,477, Dec. 22, 1977. This application Aug. 27, 1979, Ser. No. 70,138
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—175

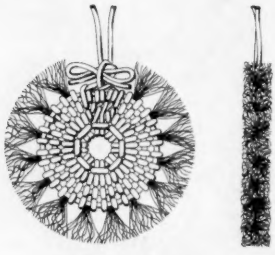


259,908
DESK CARREL
James S. Berman, New York, and Sigurd Stegmaier, Malverne, both of N.Y., assignors to Citibank, N.A., New York, N.Y.
Filed Feb. 7, 1978, Ser. No. 875,945
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—181

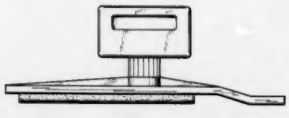


259,909
FRUIT OR CANDY CONTAINER FOR FLORAL ARRANGEMENTS, FRUIT BASKETS OR THE LIKE
John R. Cookson, Middlebury, Conn., assignor to Waterbury Companies, Inc., Waterbury, Conn.
Filed Mar. 30, 1979, Ser. No. 25,619
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—20

259,910
MACRAME COASTER OR THE LIKE
Lucine C. Simmons, Rte. 5, Box 360-B, Fayetteville, N.C. 28301
Filed Feb. 15, 1979, Ser. No. 12,467
Term of patent 14 years
Int. Cl. D07—*06*
U.S. Cl. D7—45

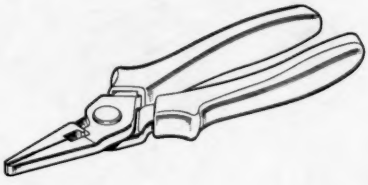


259,911
RECORD CLEANER
C. Paul Davis, Woodland Hills, and Joseph Sandor, Reseda, both of Calif., assignors to California Sounds, Ltd., Tarzana, Calif.
Filed Dec. 26, 1978, Ser. No. 973,383
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D7—161

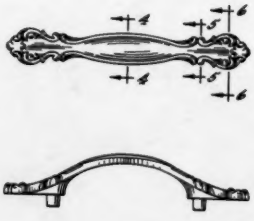


259,912
CLOTHES-PEG
Sergio Tontarelli, Via Mordini Ciriaco 37, Castelficardo (AN), Italy
Filed Feb. 26, 1979, Ser. No. 14,857
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D7—198

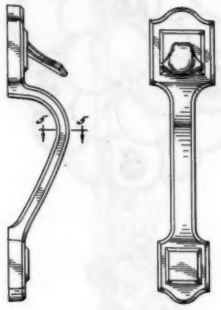
259,913
FLAT NOSE PLIERS
Ulf H. Wahlberg, Enköping, Sweden, assignor to Aktiebolaget Bahco Verktyg, Enköping, Sweden
Filed Sep. 29, 1977, Ser. No. 837,948
Claims priority, application Sweden, May 2, 1977, 770987
Term of patent 14 years
Int. Cl. D08—*05*
U.S. Cl. D8—58



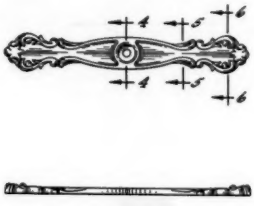
259,914
PULL
Teresa R. B. Pittenger, Rockford, Ill., assignor to Amerock Corporation, Rockford, Ill.
Filed Dec. 21, 1979, Ser. No. 106,377
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—318



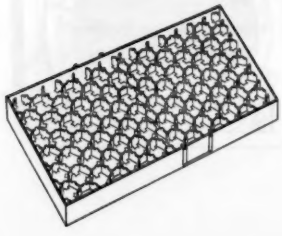
259,915
ENTRY HANDLE
Teresa R. B. Pittenger, Rockford, Ill., assignor to Amerock Corporation, Rockford, Ill.
Filed Jun. 23, 1980, Ser. No. 162,661
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—320



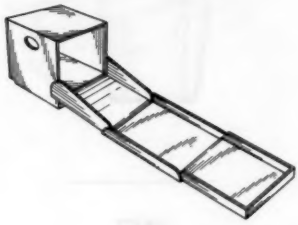
259,916
ESCUTCHEON
Teresa R. B. Pittenger, Rockford, Ill., assignor to Amerock Corporation, Rockford, Ill.
Filed Dec. 21, 1979, Ser. No. 106,378
Term of patent 14 years
Int. Cl. D8—*09*
U.S. Cl. D8—350



259,917
EGG TRAY
Albertus G. Horsting, 6685 Sonoma Hwy., Santa Rosa, Calif. 95405
Filed Mar. 31, 1978, Ser. No. 892,465
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—348



259,918
STORAGE AND DISPLAY BOX
Austen B. Hufton, 28 W. 614 Washington, West Chicago, Ill. 60185
Filed Jun. 19, 1978, Ser. No. 916,777
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—423



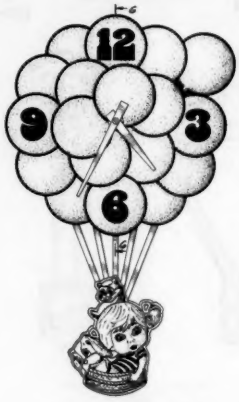
259,919
BOTTLE
Luis Sztuden, 5556 Bloch St., San Diego, Calif. 92122
Division of Ser. No. 899,838, Apr. 25, 1978. This application Jul. 17, 1980, Ser. No. 169,776
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—311

259,920
BOTTLE
Alexander Honeos, 64 Panepistimiou Ave., Athens, Greece
Filed Jun. 14, 1979, Ser. No. 48,512
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—349

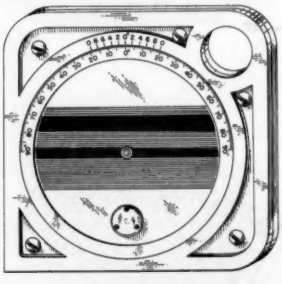
259,921
BOTTLE OR SIMILAR ARTICLE
Norbert Hartmann, Bigogno, Switzerland, assignor to Pharmaton S.A., Lugano-Bioggio, Switzerland
Filed Nov. 17, 1978, Ser. No. 961,549
Claims priority, application Switzerland, May 28, 1978, 109840
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—377

259,922
CONTAINER FOR AN ART COLOR TUBE OR THE LIKE
Kanta Seki, Ibaragi, Japan, assignor to Pentel Kabushiki Kaisha, Tokyo, Japan
Filed May 4, 1979, Ser. No. 36,225
Claims priority, application Japan, Nov. 7, 1978, 53-47203
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—418

259,923
CLOCK
Charles G. Chavana, 13132 Shasta Way, Santa Ana, Calif. 92705
Filed Dec. 26, 1978, Ser. No. 972,728
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—6



259,924
INSTRUMENT FOR THE INDICATION OF THE ANGULAR POSITION OF AN OBJECT
Lars A. Bergkvist, Gottne, 890 42 Mellansel, Sweden
Filed Nov. 13, 1978, Ser. No. 960,298
Claims priority, application Sweden, May 11, 1978, 1254
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—65



259,925

HEIGHT MEASURING SCALE

John A. Palmer, 12399 Sunridge Cir., Strongsville, Ohio 44136

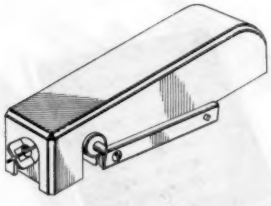
Filed Mar. 26, 1979, Ser. No. 23,623
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—71

259,926

HOUSING FOR ALARM DEVICE

Ellworth R. Danz, La Salle, and John C. Crenshaw, Joliet, both of Ill., assignors to General Time Corporation, Thomaston, Conn.

Filed Oct. 10, 1978, Ser. No. 950,230
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D10—106

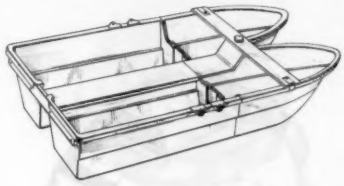


259,927

TENDER COMPRISING FOUR SEPARATE HULL PARTS

Stefan Norlund, Stältrådsvägen 32, 161 31 Bromma, Sweden

Filed Mar. 27, 1978, Ser. No. 890,759
Claims priority, application Sweden, Sep. 26, 1977, 1929
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—62

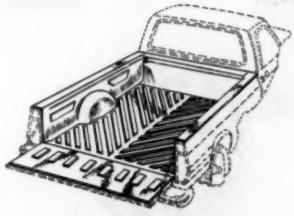


259,928

PICKUP TRUCK BED AND TAILGATE LINER

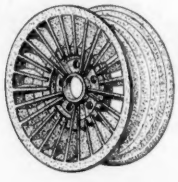
Gerald J. Weis, Dallas, Tex.; Donald L. Munoz, Bloomfield Hills, and Daniel Grote, Algonac, both of Mich., assignors to Thermoplastics Incorporated, Warren, Mich.

Filed Dec. 7, 1978, Ser. No. 967,211
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—98

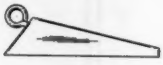


259,929
TIRE TREAD
Joseph L. Weldon, 2544 N. Sydenham St., Philadelphia, Pa. 19132
Filed Dec. 18, 1978, Ser. No. 970,431
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—140

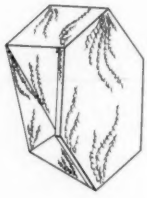
259,930
WHEEL
Ulf A. Sandberg, Kungsbacka, Sweden, assignor to AB Volvo, Goteborg, Sweden
Filed Jan. 8, 1979, Ser. No. 1,936
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—211



259,931
BOAT ANCHOR
Eugene L. Wentz, 6802 El Dorado Ct., Tampa, Fla. 33615, and R. Douglas Hannon, Rte. 2-Box 991, Odessa, Fla. 33556
Filed Jun. 23, 1978, Ser. No. 918,332
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—215

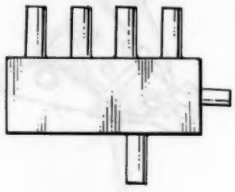


259,932
LOUDSPEAKER ENCLOSURE
James L. Hawkins, deceased, late of Philadelphia, Pa., and by Allene Hawkins, administratrix, 1434 N. 29th St., Philadelphia, Pa. 19121
Filed Oct. 10, 1978, Ser. No. 950,331
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—33

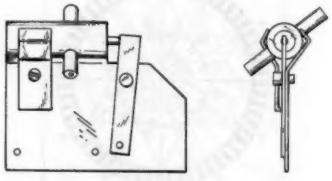


259,933
DIRECT STATION SELECTION CONSOLE
Donald A. Foggia, Ocean, N.J., and Roman F. Pomponi, Norwalk, Conn., assignors to TIE/communications, Inc., Shelton, Conn.
Filed Dec. 18, 1978, Ser. No. 970,373
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—58

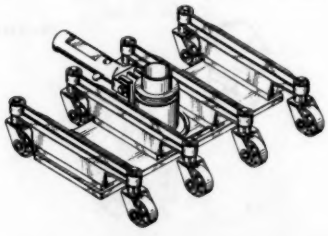
259,934
PRIMING VALVE FOR INTERNAL COMBUSTION ENGINES
John E. Lovret, 145-20 243rd St., Rosedale, N.Y. 11422
Filed Jan. 8, 1979, Ser. No. 1,470
Term of patent 14 years
Int. Cl. D15—*01*
U.S. Cl. D15—5



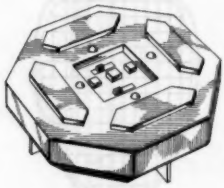
259,935
PRIMING VALVE UNIT FOR INTERNAL COMBUSTION ENGINES
John E. Lovret, 145-20 243rd St., Rosedale, N.Y. 11422
Filed Jan. 10, 1979, Ser. No. 2,375
Term of patent 14 years
Int. Cl. D15—*01*
U.S. Cl. D15—5



259,936
SWIMMING POOL VACUUM HEAD
Kenneth E. Price, 1534 Channelwood Dr., Whittier, Calif. 90601, and Isao Sasaki, Altadena, Calif., assignors to Kenneth E. Price, Whittier, Calif.
Filed Nov. 2, 1978, Ser. No. 964,577
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D15—63



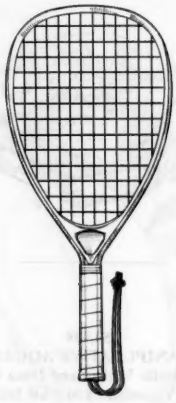
259,937
ELECTRONIC GAME HOUSING
Jeffrey P. Heuel, Riverside; William F. Palisek, Mundelein, and Lee Radke, Lake Zurich, all of Ill., assignors to Interstate Industries, Inc., Mundelein, Ill.
Filed Jul. 5, 1979, Ser. No. 53,453
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—13



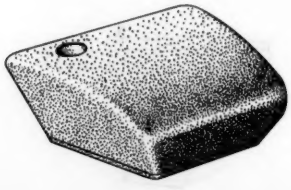
259,938
HAND MANIPULATIVE AQUATIC TOY
Robert A. Bantin, Little Valley, and Dean R. Kilbourn, Salamanca, both of N.Y., assignors to BKB Industries, Inc., Little Valley, N.Y.
Filed Nov. 21, 1977, Ser. No. 853,637
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—59

259,939
TOY WEAPON
Richard M. Rubin, Hollywood, Calif., assignor to Paramount Pictures Corporation, Los Angeles, Calif.
Filed Apr. 10, 1979, Ser. No. 28,833
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—147

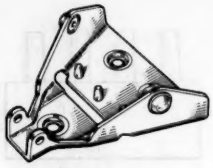
259,940
RACQUETBALL RACKET
Paul A. Witte, New Hope, Pa., and Thomas Johnson, Hopewell, N.J., assignors to AMF Incorporated, Plainsboro, N.J.
Filed Sep. 27, 1979, Ser. No. 79,504
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—212



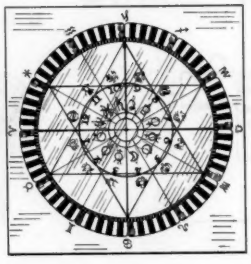
259,941
GOLF CLUB HEAD
Donald R. James, 298 Selby La., Atherton, Calif. 94025
Filed Oct. 30, 1978, Ser. No. 956,251
Term of patent 7 years
Int. Cl. D21—*02*
U.S. Cl. D21—214



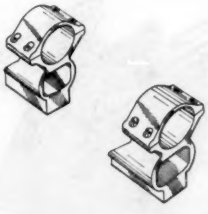
259,942
TOE FITTING FOR SKI BINDINGS
Alvar E. P. Kjellström, Sollentuna, Sweden, assignor to AB Broderna Kjellström, Stockholm, Sweden
Filed Aug. 18, 1978, Ser. No. 935,078
Claims priority, application Sweden, Feb. 21, 1978, 780499
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—229



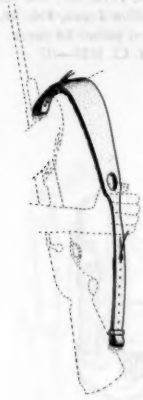
259,943
GAME BOARD
Bernard D. Hansen, Ste. 500, 11 Yorkville Ave., Toronto, Ontario, Canada (M4W 1L3)
Filed Mar. 7, 1978, Ser. No. 884,319
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—241



259,944
RIFLESCOPE MOUNT ASSEMBLY
Donald J. Burris, Greeley, Colo., assignor to Burris Company, Greeley, Colo.
Filed Sep. 11, 1978, Ser. No. 941,270
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—7

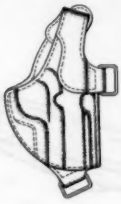


259,945
GUN SLING
John E. Bianchi, 1601 Wilt Rd., Fallbrook, Calif. 92028
Filed Apr. 27, 1979, Ser. No. 34,158
Term of patent 14 years
Int. Cl. D22—*01*
U.S. Cl. D22—7



259,946
COMBINED BELT AND SHOULDER REVOLVER HOLSTER
John E. Bianchi, 1601 Wilt Rd., and Richard D. E. Nichols, 813 Cozy Ct., both of Fallbrook, Calif. 92390
Filed Dec. 10, 1979, Ser. No. 101,913
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D22—13

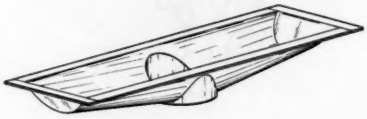
259,947
COMBINED BELT AND SHOULDER AUTOMATIC HANDGUN HOLSTER
John E. Bianchi, 1601 Wilt Rd., and Richard D. E. Nichols, 813 Cozy Ct., both of Fallbrook, Calif. 92390
Filed Dec. 17, 1979, Ser. No. 104,036
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D22—13



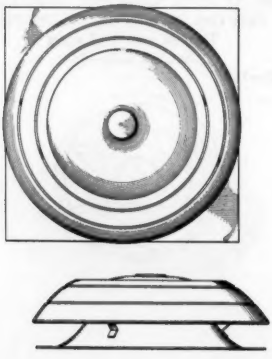
259,948
FIREARM MAGAZINE CARRIER
John E. Bianchi, 1601 Wilt Rd., and Richard D. E. Nichols, 813 Cozy Ct., both of Fallbrook, Calif. 92390
Filed Dec. 10, 1979, Ser. No. 101,916
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D22—14

259,949
STOVE DRAFT VALVE CONTROL PLATE
John H. Bane, III, 403 N. Maple Ave., Brunswick, Md. 21716
Filed Oct. 30, 1978, Ser. No. 956,078
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—127

259,950
TRENCH DRAIN
John G. Henry, Rte. 2, Quinlan, Tex. 75474
Filed Sep. 26, 1978, Ser. No. 945,824
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—42

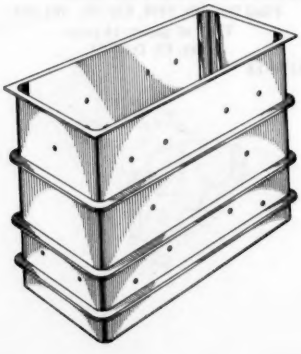


259,951
VENTILATOR
George M. Briedert, 33275 N. Canyon Quail Trail, Agua Dulce, Calif. 91350
Filed Jun. 11, 1979, Ser. No. 47,921
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—153

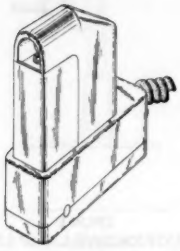


259,952
HANDHELD LIGHTED MIRROR DEVICE FOR INSPECTING THE MOUTH OR OTHER PARTS OF THE HUMAN BODY
Hiroshi Hukuba, No. 914-1, Nazukari, Nagareyama-shi, Chiba-ken, Japan, and Nobuji Nakamura, Chofu, Japan, assignors to Hiroshi Hukuba, Nagareyama, Japan
Filed Aug. 14, 1978, Ser. No. 933,728
Claims priority, application Japan, Feb. 16, 1978, 53-5476
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—13

259,953
ANIMAL HYDROTHERAPY TANK
Jerry Weissman, Pumphouse Rd., Brewster, N.Y. 10509, and Ely Kass, 26 Kings Ridge Rd., Mahopac, N.Y. 10541
Filed Sep. 22, 1978, Ser. No. 944,880
Term of patent 14 years
Int. Cl. D24—*02*; D23—*02*
U.S. Cl. D24—38

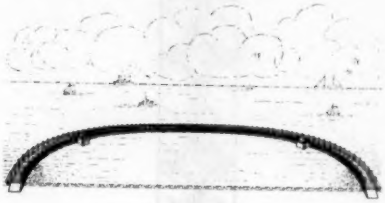


259,954
COMBINED POCKET ULTRASONIC ATOMIZER AND BATTERY CHARGER THEREFOR
Ernst Reichl, Munich, Fed. Rep. of Germany, assignor to Bosch-Siemens Hausgeräte GmbH, Stuttgart, Fed. Rep. of Germany
Filed Oct. 19, 1978, Ser. No. 952,672
Claims priority, application Fed. Rep. of Germany, Apr. 26, 1978, 4819
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—62

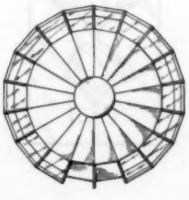


259,955
WRIST BRACE
Howard E. Helferich, Cincinnati, Ohio, assignor to Surgical Appliance Industries, Inc., Cincinnati, Ohio
Filed Mar. 14, 1979, Ser. No. 20,535
Term of patent 14 years
Int. Cl. D24—*04;* D2—*02*
U.S. Cl. D24—64

259,956
COMBINED SHORELINE PROTECTIVE STRUCTURE AND WATER PURIFICATION STRUCTURE
Joseph Shaara, Sr., 873 Montgomery St., Jersey City, N.J. 07306
Filed Apr. 17, 1978, Ser. No. 896,909
Term of patent 7 years
Int. Cl. D25—*02*
U.S. Cl. D25—1



259,957
HOUSE
Peter I. McNeall, 402 Enchanted Trail Dr., Spring, Tex. 77373
Filed Mar. 1, 1979, Ser. No. 16,622
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—19



259,958

DECORATIVE COMPOSITE GLASS PANEL FOR INSTALLATION IN A DOOR OR WINDOW

B. Jeremiah Shaffer, Worthington, Ohio, assignor to Pease Company, Fairfield, Ohio

Filed Aug. 30, 1979, Ser. No. 71,412
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—72

259,959

DECORATIVE COMPOSITE GLASS PANEL FOR INSTALLATION IN A DOOR OR WINDOW

B. Jeremiah Shaffer, Worthington, Ohio, assignor to Pease Company, Fairfield, Ohio

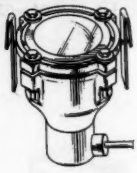
Filed Apr. 25, 1980, Ser. No. 143,589
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—72

259,960

LANDSCAPE ILLUMINATION LIGHT OR SIMILAR APPARATUS

John R. Watson, Dallas, Tex., assignor to John Watson Landscape Illumination Inc., Dallas, Tex.

Filed Dec. 7, 1978, Ser. No. 967,157
Term of patent 14 years
Int. Cl. D26—*03*
U.S. Cl. D26—24

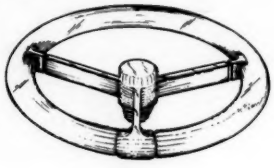


259,961

FLUORESCENT LAMP UNIT

Joseph P. Wotowiec, Cuyahoga Falls, Ohio, and Thurman Bowls, New Smyrna Beach, Fla., assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 21, 1978, Ser. No. 944,494
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D26—26

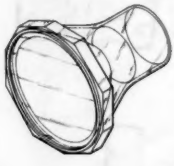


259,962

FLASHLIGHT HEAD

Knut O. Sassmannshausen, Rothenbach St., D 6580 Idar-Oberstein, Fed. Rep. of Germany

Filed Jun. 16, 1978, Ser. No. 917,012
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D26—37



259,963

LAMP ASSEMBLY FOR ELECTRICAL CONVERSION OF A GAS STREET LAMP

Ernest H. Pfaff, Deerfield, and William R. McIntire, Downers Grove, both of Ill., assignors to Enconserv, Inc., Downers Grove, Ill.

Filed Sep. 6, 1979, Ser. No. 73,552
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D26—113

259,964

HAIR CURLING ROLLER

Charles G. Edelen, 221 Orchard St., Grand Junction, Colo. 81501

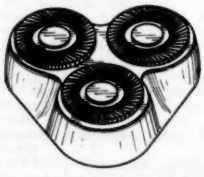
Filed Apr. 18, 1979, Ser. No. 31,315
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—37

259,965

SHAVING UNIT

Klaas T. Oord, Drachten, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 6, 1978, Ser. No. 949,300
Claims priority, application United Kingdom, Apr. 11, 1978, 984177/78
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—50



259,966

COSMETIC MIRROR

Beatrice Bogorad, 521½ E. Tennessee St. Apt. No. 3, Tallahassee, Fla. 32306

Filed Jun. 19, 1978, Ser. No. 916,778
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—70

259,967

FEED BUCKET HOLDER

Travis F. Ramsey, Rte. 1, Box 200, Quitman, Tex. 75783

Filed Feb. 5, 1979, Ser. No. 9,661
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—13

259,968

PICK-UP DEVICE FOR ANIMAL EXCREMENT

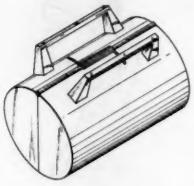
Alfons Schneider, Laurentiusstrasse 32, 6635 Schwalbach-Hulzweiler, Fed. Rep. of Germany

Filed Jan. 3, 1979, Ser. No. 730

Term of patent 14 years

Int. Cl. D30—*99*

U.S. Cl. D30—99



259,969

DRUM

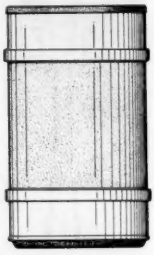
Seymour Zilbert, Demarest, N.J., assignor to Bergen Barrel & Drum Co., Demarest, N.J.

Continuation-in-part of Ser. No. 893,514, Apr. 4, 1978. This application Apr. 30, 1979, Ser. No. 34,725

Term of patent 14 years

Int. Cl. D99—*99*

U.S. Cl. D99—51



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 21ST DAY OF JULY, 1981

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. B. Chance Company: *See*—
Clutter, Melvin E., 4,280,013, Cl. 174-5.00R.

A. H. Robins Company, Inc.: *See*—
Cale, Albert D., Jr.; and Leonard, Charles A., 4,279,822, Cl. 260-326.470.

A. Johnson and Company (London) Limited: *See*—
Duckworth, Edward D., 4,279,295, Cl. 165-94.000.

A/S Niro Atomizer: *See*—
Felsvang, Karsten S.; Hansen, Ove E.; and Rasmussen, Elisabeth L., 4,279,873, Cl. 423-242.000.

Aasen, Helen C. Flea vacuum system. 4,279,095, Cl. 43-139.000.

AB Volvo: *See*—
Ahlbom, Sten H. N., 4,279,328, Cl. 187-9.00R.

Abbott, Daniel B.: *See*—
Krebs, Fred G.; and Abbott, Daniel B., 4,279,173, Cl. 74-441.000.

Abbott, Ronald E., to Overhead Door Corporation. Leg latch for in-pit dock levelers. 4,279,050, Cl. 14-71.300.

Abbruzzese, Luigi: *See*—
Gozzo, Franco; Abbruzzese, Luigi; and Longoni, Angelo, 4,279,927, Cl. 424-322.000.

Abdelmonem, Nabil: *See*—
Ringel, Helmut; Zimmer, Erich; and Abdelmonem, Nabil, 4,279,866, Cl. 423-7.000.

Abele, Manfred: *See*—
Jeblick, Werner; Roos, Ernst; Kempermann, Theo; and Abele, Manfred, 4,280,004, Cl. 521-89.000.

Abeyama, Shozo: *See*—
Kato, Tetsuo; Abeyama, Shozo; Kimura, Atsuyoshi; and Nakamura, Sadayuki, 4,279,646, Cl. 75-123.0AA.

Abrahams, Marvin S.; and Blanc, Joseph, to RCA Corporation. Method of improving silicon crystal perfection in silicon on sapphire devices. 4,279,688, Cl. 156-613.000.

ACF Industries, Incorporated: *See*—
Levin, Alan, 4,279,404, Cl. 251-167.000.
Lindberg, Allen W.; Gantzert, Thomas R.; and Hicks, Donald L., 4,279,231, Cl. 123-489.000.

Acharya, Rajguru M.; and Del Signore, James R., II, to NCR Corporation. Digital DC motor speed control circuit. 4,280,082, Cl. 318-341.000.

Achelpohl, Fritz; and Decker, Werner, to Windmoller & Holscher. Apparatus for applying web sections to a flat-lying workpiece. 4,279,686, Cl. 156-517.000.

Acheva, Jivka P.: *See*—
Novev, Todor V.; Ovcharov, Sava D.; Yordanov, Nikola S.; Acheva, Jivka P.; Yordanov, Yordan I.; and Mandova, Maria L., 4,279,708, Cl. 204-46.00R.

Acme Flooring Limited: *See*—
Miller, Henry, deceased; and Byrne, Desmond, legal representative, 4,279,532, Cl. 404-68.000.

Acre, Leon R., to Midland-Ross Corporation. Clutch retention feature of a hand control valve. 4,279,273, Cl. 137-627.500.

Adams, Don L.; Murphy, Richard D.; and Fischer, William C., to United Technologies Corporation. Desensitizing helicopter control response to inadvertent pilot inputs. 4,279,391, Cl. 244-17.130.

Ageeva, Ljubov S.: *See*—
Kreimer, July K.; and Ageeva, Ljubov S., 4,279,893, Cl. 424-89.000.

Agence Nationale de Valorisation de la Recherche (ANVAR): *See*—
Vert, Michel; Chabot, Francois; Leray, Jean; and Christel, Pascal, 4,279,249, Cl. 128-92.00D.

Ager, Ian R.; and Ramm, Peter J., to Roussel Uclaf. Novel imidazoquinolines. 4,279,912, Cl. 424-258.000.

AGFA-Gevaert, A.G.: *See*—
Laar, Erwin; and Sperber, Werner, 4,279,371, Cl. 226-91.000.
Stemme, Otto; Fergg, Berthold; Osegowitsch, Viktor; and Viehrig, Wolfgang, 4,279,491, Cl. 355-27.000.
Stemme, Otto; Wagensonner, Eduard; and Ruf, Wolfgang, 4,280,142, Cl. 358-214.000.
Thurm, Siegfried; Bunge, Konrad; and Findeis, Gunter, 4,279,502, Cl. 355-38.090.

Aggarwal, Sundar L.; Hargis, Ivan G.; and Livigni, Russell A., to General Tire & Rubber Company, The. Polydiene polyalkylene oxide block copolymers and their use as alcohol hydrocarbon dispersants. 4,279,798, Cl. 260-33.40R.

Aguirre, Ricardo. Adjustment gasification device for gas lighters. 4,279,591, Cl. 431-344.000.

Ahlbom, Sten H. N., to AB Volvo. Device for orienting a lifting means, for example, in relation to a load. 4,279,328, Cl. 187-9.00R.

Ahmad, Abu, to Owens-Corning Fiberglas Corporation. Composite foam panel. 4,279,958, Cl. 428-215.000.

Aigner, Robert; and Lovelace, James. Bottle with separate compartments. 4,279,349, Cl. 215-6.000.

Aimants Ugimag S.A.: *See*—
Boeuf, Jean-Marie; Gerest, Pierre; and Lemaire, Henri, 4,279,763, Cl. 252-62.580.

Aimpoint AB: *See*—
Johansson, Carl B., 4,279,191, Cl. 89-185.000.

Air-Glide Corporation: *See*—
Tagg, Forrest L.; and Tourville, Francis E., 4,279,430, Cl. 280-439.000.

Air Products and Chemicals, Inc.: *See*—
Longsworth, Ralph C., 4,279,127, Cl. 62-77.000.

Airco, Inc.: *See*—
Valenta, James D.; and Heruth, Kenneth T., 4,279,250, Cl. 128-200.140.

Ajax Magnethermic Corporation: *See*—
Havas, George; and Esenwein, Fred D., 4,280,038, Cl. 219-10.770.

Ajinomoto Company, Incorporated: *See*—
Takami, Toru; and Yonekawa, Yuriko, 4,279,917, Cl. 424-273.00R.

Akademie der Wissenschaften der DDR: *See*—
Karthe, Wolfgang; and Wehrsdorfer, Eike, 4,280,096, Cl. 324-316.000.

Aketa, Kohichi: *See*—
Suzuki, Yukio; Kasamatsu, Kiyoshi; and Aketa, Kohichi, 4,279,924, Cl. 424-304.000.

Akiyama, Seigo: *See*—
Saito, Yukio; Sekiya, Koichi; Takahashi, Masaaki; and Akiyama, Seigo, 4,279,616, Cl. 23-230.00B.

Akkerman, Neil H.; Foster, Stephen R.; and Goans, Kip B., to Baker CAC, Inc. Flow line monitor pilot valve assembly. 4,279,272, Cl. 137-596.180.

Aktiebolaget SKF: *See*—
Heldt, Helge, 4,279,451, Cl. 308-26.000.

Akulov, Vladislav A.: *See*—
Buryakov, Valery M.; Kolotilov, Nikolai N.; Tokhunts, Roman D.; Yakovlev, Vladimir S.; Akulov, Vladislav A.; Zabotin, Viktor G.; Levin, Viktor Y.; Lukachev, Viktor P.; Pervyshin, Alexandr N.; Zaitsev, Konstantin A.; Karakov, Vladimir D.; and Khasanov, Mubaraksha D., 4,279,405, Cl. 266-55.000.

Akzo NV: *See*—
Boomgaard, Ritse E.; Buter, Roelof; and Kiffen, Aleidus A., 4,279,800, Cl. 260-39.00P.

Alcock, James M.: *See*—
Kulesza, Ralph J.; Alcock, James M.; and Meyer, Burton C., 4,279,098, Cl. 46-101.000.

Alessio, Lorenzo E., to Black & Decker Inc. Actuator mechanism for a portable, hand-held tool. 4,280,026, Cl. 200-157.000.

Alewitz, Sam, to Perfection Corporation. Gas riser apparatus. 4,279,435, Cl. 285-242.000.

Alfanta, Teofilo. Repair kit for tubeless tires. 4,279,343, Cl. 206-582.000.

Algoma Steel Corporation, Limited, The: *See*—
Egan, James L., 4,279,408, Cl. 266-271.000.

Alikhan, Raza. Non-inverting fluid dispenser. 4,279,363, Cl. 222-94.000.

Allan, John L. H.; Finestone, Arnold B.; and Roderick, John J., to El Paso Polyolefins Company. Stabilized polyolefin compositions. 4,279,809, Cl. 260-45.95C.

Allen, Carl J. Fluorescent lamp end cap. 4,280,169, Cl. 362-217.000.

Allen & Hanburys Ltd.: *See*—
Price, Barry J.; Clitherow, John W.; and Bradshaw, John, 4,279,819, Cl. 260-326.50S.

Allen, Robert H., to University Patents, Inc. Test for pancreatic exocrine function. 4,279,886, Cl. 424-1.000.

Allied Chemical Corporation: *See*—
Colbert, Aaron; and Figiel, Francis J., 4,279,665, Cl. 134-38.000.
Figiel, Francis J.; and Colbert, Aaron, 4,279,664, Cl. 134-38.000.
Schevey, William R.; Weslowski, Robert G.; and Morentz, John D., 4,279,279, Cl. 141-5.000.

Allis-Chalmers Corporation: *See*—
Breed, Michal A.; and Prince, George T., 4,279,175, Cl. 74-473.00R.
Plate, John R.; and Lucas, James H., 4,279,334, Cl. 192-3.570.

Allred, John C. High speed particle sorter using a field emission electrode. 4,279,345, Cl. 209-3.200.

Alonso, Sydney A. Electronic music sampling techniques. 4,279,185, Cl. 84-1.010.

Alps Electric Co., Ltd.: *See*—
Kondo, Shiro; and Takii, Yasuo, 4,280,031, Cl. 200-314.000.
Sekiguchi, Mitsuo, 4,280,113, Cl. 333-202.000.

Alsthom-Atlantique: *See*—
Blanc, Jacques; Coulon, Andre; and Pellus, Gilbert, 4,279,706, Cl. 204-26.000.

Alter, Hobart L., to Coast Catamaran Corporation. Apparatus for mounting an outboard motor. 4,279,602, Cl. 440-63.000.

Altmayer, Joseph, to E & E Seegmiller Limited. Portable hydraulic gear pulling device. 4,279,068, Cl. 29-252.000.

Aluminum Pechiney: *See—*
Hanrot, Jean-Pascal; and Volpeliere, Jacky, 4,279,549, Cl. 406-14.000.

Amemiya, Norio: *See—*
Nishikawa, Masaji; Amemiya, Norio; Yasuda, Tadahiro; and Nakayama, Shigeru, 4,279,980, Cl. 430-68.000.

American Aquatic Concepts and Enterprises, Inc.: *See—*
Drew, Daniel C., 4,279,039, Cl. 2-428.000.

American Can Company: *See—*
Burroughs, Reginald L.; Thompson, William J.; and Wooldridge, Derek, 4,279,663, Cl. 127-1.000.

American Colloid Company: *See—*
Clem, Arthur G., 4,279,547, Cl. 405-258.000.

American Cyanamid Company: *See—*
Henkel, Herbert W.; and Paradiso, Mary R., 4,279,891, Cl. 424-73.000.
Kudla, Ronald M., 4,279,901, Cl. 424-241.000.

American Hospital Supply Corporation: *See—*
Grimm, Phillip R., 4,279,597, Cl. 433-129.000.

American Optical Corporation: *See—*
Ramirez, Peter R.; and Canterbury, Bradford, 4,279,401, Cl. 249-139.000.

American Original Corporation, The: *See—*
Hutchison, Wayne A.; and DeVore, Steven R., 4,279,934, Cl. 426-262.000.

American Standard Inc.: *See—*
Morgan, Glenn; and Morris, Robert B., 4,279,332, Cl. 188-170.000.

American Sterilizer Company: *See—*
Miller, William R., 4,279,563, Cl. 414-611.000.

American Sunroof Corporation: *See—*
Prechter, Heinz C.; and Kaltz, Milton C., 4,279,441, Cl. 296-218.000.

AMF Incorporated: *See—*
Diacont, George P., Jr., 4,279,209, Cl. 112-104.000.
Garofalo, Giovanni, 4,279,040, Cl. 2-428.000.
Ross, Haldon, 4,279,174, Cl. 74-473.00P.

Amicel, Charles; Biot, Bernard; Butruille, Yves; and Ollivier, Christian, to Sodip SA. Hollow fiber apparatus for the fractionation of fluid especially useful as an artificial kidney. 4,279,678, Cl. 156-169.000.

Amorese, Franklyn J.; and Piarulli, Vincent J., to Sybron Corporation. Quick opening manhole cover assembly. 4,279,356, Cl. 220-314.000.

AMP Incorporated: *See—*
Zell, Dale R.; and Morningstar, Leroy J., 4,279,074, Cl. 29-866.000.

Ampex Corporation: *See—*
Stock, Rodney D., 4,280,138, Cl. 358-150.000.
Tin, Lucas K., 4,280,153, Cl. 360-66.000.

Anaconda Company, The: *See—*
Mart, Carl F.; and Waits, Douglas B., 4,280,201, Cl. 367-56.000.

Anchor Hocking Corporation: *See—*
Roberts, Cecil P.; and Ochs, Charles S., 4,279,115, Cl. 53-314.000.

Anderson, Jack A., to Bethlehem Steel Corporation. Temperature measuring system. 4,279,151, Cl. 73-343.00R.

Anderson, Martin; and Woodall, Roger E., to Shell Oil Company. Diphydrothiazine derivatives. 4,279,903, Cl. 424-246.000.

Anderson, Maynard E.; Marshall, Robert T.; and Stringer, William C., to United States of America, Agriculture. Carcass cleaning unit. 4,279,059, Cl. 17-51.000.

Anderson, Nathaniel C.; and Grover, Charles R., Jr., to International Business Machines Corporation. Electroplating of nickel-iron alloys for uniformity of nickel/iron ratio using a low density plating current. 4,279,707, Cl. 204-43.00T.

Anderson, Nevil J.: *See—*
Weiss, Donald E.; Kolarik, Luis O.; Priestley, Anthony J.; and Anderson, Nevil J., 4,279,756, Cl. 210-667.000.

Ando, Masahisa; Kato, Keigo; and Ishikawa, Tomozi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Power steering device for wheeled vehicles. 4,279,323, Cl. 180-148.000.

Ando, Masatoshi. Slot loading cassette tape mechanism. 4,280,154, Cl. 360-96.400.

Andriacchi, Thomas P.; Galante, Jorge O.; and Hampton, Steven J., to Rush-Presbyterian-St. Luke's Medical Center. Hip prosthesis. 4,279,042, Cl. 3-1.913.

Anic S.p.A.: *See—*
Prevedello, Aldo; Brunelli, Maurizio; and Platone, Edoardo, 4,279,834, Cl. 260-464.000.

Anritsu Keiki Kabushiki Kaisha: *See—*
Nakamura, Tsuneo, 4,279,154, Cl. 73-359.00R.

Ansell, Martin P.: *See—*
Stewart, Clive E. E.; Rosser, William J. N.; and Ansell, Martin P., 4,279,785, Cl. 252-518.000.

Anspach, Roy L.: *See—*
Campbell, James R.; and Anspach, Roy L., 4,280,039, Cl. 219-78.110.

Anthony, Thomas R.; and Cline, Harvey E., to General Electric Company. Zirconium alloys having an integral β-quenched corrosion-resistant surface region. 4,279,667, Cl. 148-32.000.

Antonwitsch, Lucien M., to Oldenkamp, Jerry. Apparatus and method for removing magnetic articles from a flow of loosely packed material. 4,279,744, Cl. 209-214.000.

Aoki, Kozo; Furutachi, Nobuo; and Sawada, Satoru, to Fuji Photo Film Co., Ltd. Color photographic materials. 4,279,990, Cl. 430-551.000.

Aoki, Masaaki: *See—*
Ono, Yuichi; Ito, Kazuhiro; Mori, Mitsuhiro; Aoki, Masaaki; and Kurata, Kazuhiro, 4,280,131, Cl. 357-17.000.

Aoki, Masahiro: *See—*
Ito, Naoya; Saito, Kiichi; Yoshida, Takeshi; Aoki, Masahiro; Okubo, Masao; and Miki, Masayoshi, 4,279,648, Cl. 75-128.00C.

Aoki, Masaki; Yoshida, Shigeru; Yamazoe, Hiroshi; and Nagasawa, Masahiro, to Matsushita Electric Industrial Co. Method of making boron cantilever. 4,279,691, Cl. 156-656.000.

Aoki, Takanori: *See—*
Misaki, Takashi; Aoki, Takanori; and Miyawaki, Yukihiko, 4,280,146, Cl. 360-10.000.

Appleman, William S., to RPC Corporation. Anti-sway load handling apparatus. 4,279,347, Cl. 212-147.000.

Appleton, John M. Alternating piston rotary engine with latching control mechanism and lost motion connection. 4,279,577, Cl. 418-35.000.

Arai, Takeo: *See—*
Ban, Keisuke; Arai, Takeo; and Daimaru, Akimasa, 4,279,289, Cl. 164-97.000.

ARBED Acieries Reunies de Burbach-Eich-Dudelange, Societe Anonyme: *See—*
Block, Franz-Rudolf, 4,279,149, Cl. 73-290.00R.
Schmitz, Fernand, 4,279,139, Cl. 72-234.000.

Arco Environmental Company: *See—*
Nielson, Niel E.; Kreiling, Ronald L.; Hill, Robert C.; and Nice, Ralph A., 4,279,753, Cl. 210-605.000.

Arendt, Ronald H., to General Electric Company. Electrolyte structure with strontium titanate matrix for molten carbonate fuel cells. 4,279,971, Cl. 429-46.000.

Argus Chemical Corporation: *See—*
Halle, Reidar; Peterson, David; and Lewis, Roger N., 4,279,831, Cl. 260-453.0RZ.
Ohzeki, Toshio; and Semba, Takanori, 4,279,805, Cl. 260-45.9NC.

Arielly, Salo: *See—*
Claeson, Karl G.; Aurell, Leif E.; Simonsson, Leif R.; and Arielly, Salo, 4,279,810, Cl. 260-112.50R.

Arita, Kishio: *See—*
Fujiwara, Koichi; Yamauchi, Coro; Arita, Kishio; and Tsurumi, Shigeyuki, 4,279,649, Cl. 75-173.00A.

Armstrong World Industries, Inc.: *See—*
Piersol, Jay L., 4,279,696, Cl. 162-146.000.

Arndt, Carl; and Mueller, Martin, to Owens-Illinois, Inc. Cup forming mandrel. 4,279,585, Cl. 425-403.000.

Arnold, Carroll H., to Wain-Roy, Inc. Excavating buckets. 4,279,085, Cl. 37-103.000.

Arnold, Herbert; and Gerhards, Gerd, to Robert Bosch GmbH. Electronic injection-amount regulating apparatus in auto-ignited internal combustion engines. 4,279,229, Cl. 123-359.000.

Arnold, John, to W. H. Brady Co. Tape dispenser package with roll restraining cover. 4,279,359, Cl. 221-70.000.

Arora, Mulk A.; and Randall, John J., Jr., to Sprague Electric Company. AC Etching of aluminum capacitor. 4,279,714, Cl. 204-129.900.

Arora, Mulk A.; Randall, John J., Jr.; and Bernard, Walter J., to Sprague Electric Company. Etching of aluminum capacitor foil. 4,279,715, Cl. 204-129.900.

Artamonov, Viktor L.: *See—*
Medovar, Boris I.; Baglai, Vitaly M.; Us, Vasily I.; Bogachenko, Alexei G.; Timashov, Grigory A.; Fedorovsky, Boris B.; Bondarenko, Oleg P.; Shtanko, Jury P.; Artamonov, Viktor L.; Pavlov, Leonid V.; Eltsov, Konstantin S.; Stetsenko, Nikolai V.; Kaganovsky, Gary P.; Korotkov, Albert N.; and Popov, Sergei S., 4,279,642, Cl. 75-10.00C.

Arthur Guinness Son and Company: *See—*
Hildebrand, Peter C. R., 4,279,938, Cl. 426-424.000.

Artusy, Bobby L. Self-regulating solar window device. 4,279,240, Cl. 126-419.000.

Arvizu, Oscar O. Timed food dispenser for animals. 4,279,221, Cl. 119-51.110.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Nishikido, Joji; Fukuoka, Yohei; and Tamura, Nobuhiro, 4,279,836, Cl. 260-500.50H.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Shono, Tetsuji; Goto, Kazuo; and Ohishi, Michiro, 4,279,489, Cl. 354-155.000.

Asai Germanium Research Institute: *See—*
Ishida, Nakao; Satoh, Hiroshi; Suzuki, Fujio; and Miyao, Kouhei, 4,279,892, Cl. 424-85.000.

Asai, Tsuyoshi: *See—*
Fujimori, Naoji; Tobioka, Masaaki; Asai, Tsuyoshi; Yamamoto, Takaharu; and Miyake, Masaya, 4,279,651, Cl. 75-233.000.

Asakura, Shintaro: *See—*
Yokoyama, Tohei; Asakura, Shintaro; Urayama, Kiyoshi; and Fujii, Kenji, 4,279,165, Cl. 73-826.000.

Asami, Seiichi: *See—*
Ogawa, Yutaka; Takehara, Toshio; and Asami, Seiichi, 4,279,849, Cl. 264-63.000.

Ashida, Eiji; Nihei, Masayasu; Wachi, Hiroshi; Sato, Akira; and Kokura, Satoshi, to Hitachi, Ltd. Method and apparatus for automatically controlling arc welding. 4,280,137, Cl. 358-101.000.

Ashland Chemical Company: *See—*
Culbertson, Billy M.; and Post, Larry K., 4,279,833, Cl. 260-464.000.

Asinovsky, Eduard N.: *See—*
Pospelov, Boris S.; Bendersky, Alexandr F.; Kolesov, Jury A.; Nefediev, Yakov N.; Levkovich, Mikhail I.; and Asinovsky, Eduard N., 4,280,165, Cl. 361-236.000.

Assarsson, Alf G.; and Korpela, Heikki, to Gulfeber, A.B. Method for continuous manufacture of foamed plastic. 4,279,847, Cl. 264-51.000.

Associated Lead Inc.: *See*—
Muldrow, Charles N., Jr., 4,279,806, Cl. 260-45.75B.

Astakhov, Evgeny A.: *See*—
Zverev, Anatoly I.; Astakhov, Evgeny A.; Klimenko, Valery S.; Skadin, Vasily G.; and Timoshin, Mikhail A., 4,279,383, Cl. 239-61.000.

Aubert, Paul, to Regie Nationale des Usines Renault. Multi-level pressure regulating valve. 4,279,268, Cl. 137-115.000.

Audran, Roger G. L.; and Huguenard, Albert P., to Eastman Kodak Company. Process of preparing magnetic recording elements containing transparent recording layer. 4,279,945, Cl. 427-130.000.

Aurell, Leif E.: *See*—
Claeson, Karl G.; Aurell, Leif E.; Simonsson, Leif R.; and Arielly, Salo, 4,279,810, Cl. 260-112.50R.

Auriemma, Peter R., to United Technologies Corporation. Sideplates for rotor disk and rotor blades. 4,279,572, Cl. 416-220.00R.

Austin, John J.; and Webinger, George, to Champion International Corporation. Expandable food package container. 4,279,933, Cl. 426-124.000.

Australian Atomic Energy Commission: *See*—
Evans, John V.; and Matthews, Ralph W., 4,280,053, Cl. 250-432.0PD.

Avery, Peter, to Rolls-Royce Limited. Turbine rotor. 4,279,575, Cl. 416-244.00A.

B. F. Goodrich Company, The: *See*—
Landsness, Clifford A., 4,279,683, Cl. 156-397.000.

Babcock-Hitachi Kabushiki Kaisha: *See*—
Kajiyama, Sigeru; Kanda, Kimio; and Sugiyama, Sakae, 4,279,158, Cl. 73-637.000.

Babini, Giancarlo, to CSELT Centro Studi e Laboratori Telecomunicazioni S.p.A. Method of and circuit arrangement for discharging a storage capacitor. 4,280,086, Cl. 320-1.000.

Bacon, James L., to International Business Machines Corporation. Coarse scan/fine print algorithm. 4,280,144, Cl. 358-280.000.

Baglai, Vitaly M.: *See*—
Medovar, Boris I.; Baglai, Vitaly M.; Us, Vasily I.; Bogachenko, Alexei G.; Timashov, Grigory A.; Fedorovsky, Boris B.; Bondarenko, Oleg P.; Shtanko, Jury P.; Artamonov, Viktor L.; Pavlov, Leonid V.; Eltsov, Konstantin S.; Stetsenko, Nikolai V.; Kaganovsky, Gary P.; Korotkov, Albert N.; and Popov, Sergei S., 4,279,642, Cl. 75-10.00C.

Baier, Klaus: *See*—
Maute, Alfred; Teitz, Konrad; Baier, Klaus; and Heid, Hans, 4,279,511, Cl. 356-328.000.

Bailey, Dale O.; and Honl, Paul G., to Minnesota Mining and Manufacturing Company. Microbiological growth container. 4,280,002, Cl. 435-298.000.

Baines, Eric; and Harvey, Kenneth, to Colgate-Palmolive Company. Periodontal dental composition. 4,279,889, Cl. 424-57.000.

Baird, Donald H.; and McDonough, Martin S., to GTE Laboratories Incorporated. Process for making electroluminescent films and devices. 4,279,726, Cl. 204-192.00P.

Baker CAC, Inc.: *See*—
Akkerman, Neil H.; Foster, Stephen R.; and Goans, Kip B., 4,279,272, Cl. 137-596.180.

Baker, Philip G.; Fitch, John K.; and Vance, Henry T., Jr., to Polaroid Corporation. Adapter for coupling a camera to an optical instrument. 4,279,487, Cl. 354-79.000.

Bakewell, Brian A.: *See*—
England, Charles J.; and Bakewell, Brian A., 4,279,483, Cl. 354-5.000.

Baldwin, John J.; and Ponticello, Gerald S., to Merck & Co., Inc. Polysubstituted-2-(3-loweralkylamino-2-R_1O-propoxy)pyridines. 4,279,913, Cl. 424-258.000.

Baldwin, John L. E., to Independent Broadcasting Authority. Digital television system and method. 4,280,147, Cl. 360-10.000.

Baldwin Piano & Organ Company: *See*—
Kappes, Joseph L., 4,279,187, Cl. 84-1.030.
Kelly, Lawrence J., 4,279,189, Cl. 84-421.000.

Baldwin, Ronald M.; Lin, Tz-Hong; and Winchell, Harry S., to Medi-Physics, Inc. Amides useful as brain imaging agents. 4,279,887, Cl. 424-1.500.

Baldwin, Samuel L., to General Electric Company. Luminaire. 4,280,170, Cl. 362-224.000.

Balkanli, Hayati. Bourdon tube transducer. 4,279,155, Cl. 73-368.600.

Balzers Aktiengesellschaft fur Hochvakuumtechnik und Dunne Schichten: *See*—
Buhl, Rainer; and Signer, Hans, 4,279,216, Cl. 118-723.000.

Ban, Keisuke; Arai, Takeo; and Daimaru, Akimasa, to Honda Giken Kogyo Kabushiki Kaisha. Process for preparation of fiber-reinforced magnesium alloy materials. 4,279,289, Cl. 164-97.000.

Bank of America N.T. & S.A.: *See*—
Naffziger, Larry C., 4,279,452, Cl. 308-36.100.

Barden, Bruce L.; and Coder, William D., Jr., to General Tire & Rubber Company, The. Method for treating polyurethane foam. 4,279,953, Cl. 428-90.000.

Barden, James D., to Versar, Inc. Method and apparatus for analysis of total atmospheric sulfuric acid content. 4,279,618, Cl. 23-232.00R.

Barker, D. Roy: *See*—
Harcourt, Colin H.; and Barker, D. Roy, 4,279,603, Cl. 440-90.000.

Barnes, George A.; and Perhacs, Leslie, Jr., to Victory Games, Inc. Table top golfing figure with spring driving rotatable upper torso. 4,279,419, Cl. 273-87.400.

Barnes, Robert S.: *See*—
Campbell, James R.; and Anspach, Roy L., 4,280,039, Cl. 219-78.110.

Barnett, Roger C.; Sharpless, Robert G.; and Mossman, Colin F., to Rank Organisation Limited, The. Apparatus for use in film splicing. 4,279,685, Cl. 156-509.000.

Barry-Wehmiller Company: *See*—
Huling, James K., 4,279,858, Cl. 422-25.000.

Bartels, Bruce E., to Wheelabrator Corporation of Canada Limited. Fabric for use in protection for chain saws. 4,279,956, Cl. 428-192.000.

BASF Aktiengesellschaft: *See*—
DeBeuckelaer, Gerard; Jarre, Wolfgang; Wurmb, Rolf; and Marx, Matthias, 4,279,757, Cl. 210-671.000.
Gutsche, Klaus; Scharwaechter, Peter; Kohlmann, Wilhelm; and Kroemer, Gerd, 4,279,899, Cl. 424-229.000.
Schoellkopf, Ulrich; Hausberg, Hans-Heinrich; Boell, Walter; May, Hans-Joachim; and Koenig, Horst, 4,280,008, Cl. 548-301.000.

Bates, George W., to Convergence Corporation. Helical scan video tape recorder guard band interference detector for generating control pulses at low tape speeds. 4,280,150, Cl. 360-14.000.

Bauer, Philippe; Lamy, Jean; and Martel, Bernard, to Societe Industrielle de Brevets et D'Etudes S.I.B.E. Fuel control systems for internal combustion engines. 4,279,230, Cl. 123-440.000.

Baumert, Dietrich: *See*—
Nusslein, Ludwig; Baumert, Dietrich; and Pieroh, Ernst A., 4,279,907, Cl. 424-248.510.

Baumstark, Herta: *See*—
Meyer, Rainer-Leo; John, Rainmar; Eisenhauer, Bernhard; and Baumstark, Herta, 4,279,962, Cl. 428-332.000.

Baun, Kenneth W.; and Saunders, Jimmy G., to Burroughs Corporation. Data link processor for magnetic tape data transfer system. 4,280,193, Cl. 364-900.000.

Baxter, Samuel; and Changani, Pushpkumar D., to Monsanto Company. Process for extruding an open-cell foamed polyolefin filter. 4,279,848, Cl. 264-53.000.

Baxter Travenol Laboratories, Inc.: *See*—
Ward, Gary A., 4,279,352, Cl. 215-247.000.

Bay, Marvon; and Larson, Norman L. Portable golf practice platform. 4,279,420, Cl. 273-187.00A.

Bayer AG: *See*—
Overhoff, Theodor; Schulten, Rudolf; Singh, Jasbir; Sylvester, Gerd; and Witte, Josef, 4,279,697, Cl. 176-22.000.

Bayer Aktiengesellschaft: *See*—
Bonse, Gerhard; Blank, Heinz U.; Brandes, Wilhelm; and Paul, Volker, 4,279,921, Cl. 424-285.000.
Dieterich, Dieter, 4,279,832, Cl. 260-453.00P.
Fuchs, Rainer; Hoffmann, Hellmut; Hammann, Ingeborg; Homeyer, Bernhard; and Stendel, Wilhelm, 4,279,920, Cl. 424-282.000.
Fuchs, Rainer; Naumann, Klaus; Lantzsch, Reinhard; Hagemann, Hermann; Hammann, Ingeborg; Homeyer, Bernhard; Behrenz, Wolfgang; and Stendel, Wilhelm, 4,279,923, Cl. 424-304.000.
Jeblick, Werner; Roos, Ernst; Kempermann, Theo; and Abele, Manfred, 4,280,004, Cl. 521-89.000.
Meisert, Ernst; Bohne, Franz-Josef; Brecht, Klaus; Mormann, Werner; Krohn, Wolfgang; and Henes, Gerhard, 4,280,007, Cl. 521-159.000.
Schallner, Otto; and Hamprecht, Rainer, 4,279,813, Cl. 260-163.000.
Schmitz, Reinold, 4,279,825, Cl. 260-371.000.
Schulze, Hans; Walz, Klaus; Jakobs, Karlhans; and Boehmke, Gunther, 4,279,614, Cl. 8-533.000.
Schuster, Karl-Ernst; Rudolph, Hans; Mayer, Wolfram; and Rosenkranz, Hans J., 4,279,718, Cl. 204-159.150.
Vente, Paul; Seidenschnur, Dieter; Knipp, Ulrich; and Spenner, Anton, 4,279,856, Cl. 264-313.000.
Wellner, Wolfgang; and Hajek, Manfred, 4,279,793, Cl. 260-18.00R.

BBC Brown, Boveri & Company Limited: *See*—
Czech, Franz; and Krieter, George-Heinz, 4,280,015, Cl. 174-28.000.

Beacom, Roger. Dual seal gasket. 4,279,425, Cl. 277-207.00A.

Bealle, John, to Texas Instruments Incorporated. Method of contouring the recording surface of a magnetic head transducer. 4,279,623, Cl. 51-283.00R.

Beavon, David K., to Ralph M. Parsons Company. Process for sulfur production. 4,279,882, Cl. 423-574.00R.

Beck, John R. Animal trap attachment. 4,279,094, Cl. 43-96.000.

Beckman Instruments, Inc.: *See*—
Brown, James R., 4,279,510, Cl. 356-319.000.

Becton Dickinson & Company: *See*—
Gutcho, Sidney; and Mansbach, Lillian, 4,279,859, Cl. 422-61.000.
Reese, Max G.; Ransom, Dennis K.; and Johnson, LaVell R., 4,279,885, Cl. 424-1.000.

Beguwala, Moiz M. E.; and Erdmann, Francis M., to Rockwell International Corporation. Fabrication of a nonvolatile memory array device. 4,279,069, Cl. 29-571.000.

Behrenz, Wolfgang: *See*—
Fuchs, Rainer; Naumann, Klaus; Lantzsch, Reinhard; Hagemann, Hermann; Hammann, Ingeborg; Homeyer, Bernhard; Behrenz, Wolfgang; and Stendel, Wilhelm, 4,279,923, Cl. 424-304.000.

Behringer, Rebecca K. Liner for a litter box. 4,279,217, Cl. 119-1.000.

Belden Corporation: *See*—
Nickence, John G., 4,279,457, Cl. 339-36.000.

Belger, Peter: *See*—
Strauch, Dieter; and Belger, Peter, 4,279,661, Cl. 106-288.00B.

Belgorod, Barry M. Spectacle lens having continuously variable controlled density and fast response time. 4,279,474, Cl. 350-331.00R.

Belkevich, Petr I.: *See*—
Lyakhevich, Genrikh D.; Belkevich, Petr I.; Rudkovsky, Alexandr D.; Sokolovsky, Alexandr E.; and Kirilchik, Alexandr I., 4,279,865, Cl. 422-187.000.

Bell, Alexis T.: *See*—
Osada, Yoshihito; Bell, Alexis T.; and Shen, Mitchel M., 4,279,723, Cl. 204-164.000.

Bell & Howell Company: *See*—
Dann, Bert H., 4,280,100, Cl. 329-103.000.

Bell, John P., to United States of America, Environmental Protection Agency. Particle collector and fractionator. 4,279,156, Cl. 73-863.220.

Bell, Robert L., to Fisher Corporation. Reclining seat latch. 4,279,442, Cl. 297-367.000.

Bell, Ronald L., to Varian Associates, Inc. Collector for thermionic energy converter. 4,280,074, Cl. 310-306.000.

Bell Telephone Laboratories, Incorporated: *See*—
Franey, John P.; and Graedel, Thomas E., 4,279,773, Cl. 252-408.000.
Hafer, Edward H.; and Klinger, William J., 4,280,217, Cl. 370-63.000.
Lueddecke, Donald E.; Mottine, John J., Jr.; and Vesperman, William C., 4,279,789, Cl. 260-17.00R.
Sherman, Charles J., 4,279,459, Cl. 339-75.0MP.

Bellows, Richard J.; and Grimes, Patrick G., to Exxon Research & Engineering Co. Annular electrodes for shunt current elimination. 4,279,732, Cl. 204-269.000.

Belveal, Robert E., to Houston Systems Manufacturing Co., Inc. Air diffuser assembly. 4,279,842, Cl. 261-124.000.

Bendersky, Alexandr F.: *See*—
Pospelov, Boris S.; Bendersky, Alexandr F.; Kolesov, Jury A.; Nefediev, Yakov N.; Levkovich, Mikhail I.; and Asinovsky, Eduard N., 4,280,165, Cl. 361-236.000.

Bendix Corporation, The: *See*—
Knapp, Carl L., 4,279,458, Cl. 339-45.00M.
Koppelmann, Roger F., 4,280,202, Cl. 367-87.000.

Bendock, Edward M. Shower curtain clip. 4,279,396, Cl. 248-206.00R.

Benson, Arthur L.; and Jordan, David A., to Dexter Corporation, The. Nonwoven fibrous substrate for battery separator. 4,279,979, Cl. 429-254.000.

Beran, Franz: *See*—
Lassmann, Eberhard; Kohler, Peter; Beran, Franz; and Gerhards, Hans J., 4,279,872, Cl. 423-228.000.

Berg, Norman H. Emergency replacement pulley belt for automobiles or the like. 4,279,606, Cl. 474-257.000.

Berg, Peter G.: *See*—
Marcoux, Leo; and Berg, Peter G., 4,279,234, Cl. 123-549.000.

Berger, Fritz: *See*—
Bruckner, Georg F.; Geike, Bernd; Schoen, Bernd-Jurgen; and Berger, Fritz, 4,279,038, Cl. 2-425.000.

Berger, Jean-Yves; Kostelitz, Michel; Reynaud, Bernard; and Egee, Raymond, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude; and La Soudure Autogene Francaise. Process and installation for automatic ignition of a plasma cutting torch. 4,280,042, Cl. 219-121.0PT.

Berisch, Volker, to ITT Industries, Inc. Brake power control unit for two-circuit brake systems incorporating a locking piston operated hydraulically. 4,279,448, Cl. 303-6.00C.

Bernard, Walter J.: *See*—
Arora, Mulk A.; Randall, John J., Jr.; and Bernard, Walter J., 4,279,715, Cl. 204-129.900.

Berner, Godwin, to Ciba-Geigy Corporation. Photocurable composition. 4,279,720, Cl. 204-159.230.

Bernick, Robert L.: *See*—
Chao, Chente; Nakaji, Edward M.; and Bernick, Robert L., 4,279,070, Cl. 29-583.000.

Berriman, Lester P.: *See*—
Paul, Donald G.; and Berriman, Lester P., 4,279,627, Cl. 55-238.000.

Berthe, Jacques: *See*—
Forterre, Gerard; and Berthe, Jacques, 4,280,111, Cl. 333-1.100.

Bertone, Andrea: *See*—
Boggio, Francesco; Bertone, Andrea; and Tumolo, Enzo, 4,279,395, Cl. 246-182.00R.

Bertrand, Yves. Method for improving the thermic insulation of a building with a rigid frame structure. 4,279,112, Cl. 52-741.000.

Bertus, Brent J.; McKay, Dwight L.; and Mark, H. Wayne, to Phillips Petroleum Company. Passivation of metals contaminating a used cracking catalyst with certain antimony carbonates and their thio analogues. 4,279,735, Cl. 208-113.000.

Bethlehem Steel Corporation: *See*—
Anderson, Jack A., 4,279,151, Cl. 73-343.00R.
Greenberg, Lawrence A., 4,279,400, Cl. 249-106.000.
Kwasnoski, Daniel; Sterner, Charles J.; Horst, Russel J.; and Burcaw, Kenneth R., 4,279,703, Cl. 202-158.000.

Bettiol, Bruno; Harsigny, Christian; and Lenne, William, to Essilor International Cie Generale d'Optique. Ophthalmic lens having an aspheric surface. 4,279,480, Cl. 351-159.000.

Betz, Carl R.: *See*—
Drexler, Jerome; and Betz, Carl R., 4,279,989, Cl. 430-531.000.

Betz Laboratories, Inc.: *See*—
Muccitelli, John A., 4,279,767, Cl. 252-178.000.

Betz, Wolfgang, to MTU Motoren-Und Turbinen-Union Munchen GmbH. Hot isostatic press. 4,279,581, Cl. 425-78.000.

BICC Limited: *See*—
Papadopulos, Michael S., 4,280,014, Cl. 174-14.00R.
Willis, Arthur J., 4,280,225, Cl. 455-55.000.

Bielawski, John C.: *See*—
Powers, Robert W.; and Bielawski, John C., 4,279,725, Cl. 204-181.00F.

Bilofsky, Ruth C.; and Nestle, Mara O., to Polaroid Corporation. Silver image stabilization. 4,279,983, Cl. 430-228.000.

Bilsing, Ulrich: *See*—
Ivanov, Rumen V.; Nikolov, Dobrin V.; Bilsing, Ulrich; Weber, Heinz; and Schmidt, Manfred, 4,279,742, Cl. 209-166.000.

Biodata S.p.A.: *See*—
Ricci, Giorgio, 4,279,999, Cl. 435-183.000.

Biot, Bernard: *See*—
Amicel, Charles; Biot, Bernard; Butruille, Yves; and Ollivier, Christian, 4,279,678, Cl. 156-169.000.

Birkestrand, Orville J. Tool control head for pipe and tubing cutting machine. 4,279,181, Cl. 82-21.00A.

Bittner, Emil: *See*—
Jovanovics, Karola; Szasz, Kalman; Kellner, Bela; Nemeth, Laszlo; Relle, Zsuzsa; Bittner, Emil; Dezseri, Eszter; and Eles, Janos, 4,279,816, Cl. 260-244.400.
Jovanovics, Karola; Szasz, Kalman; Kellner, Bela; Nemeth, Laszlo; Relle, Zsuzsa; Bittner, Emil; Deszeri, Eszter; and Eles, Janos, 4,279,915, Cl. 424-262.000.
Jovanovics, Karola; Szasz, Kalman; Kellner, Bela; Nemeth, Laszlo; Relle, Zsuzsa; Bittner, Emil; Deszeri, Eszter; and Eles, Janos, 4,279,916, Cl. 424-262.000.

Black & Decker Inc.: *See*—
Alessio, Lorenzo E., 4,280,026, Cl. 200-157.000.

Blackmore, Douglas. Skin effect heat generating unit having convective and conductive transfer of heat. 4,280,045, Cl. 219-540.000.

Blanc, Jacques; Coulon, Andre; and Pellus, Gilbert, to Alsthom-Atlantique; and TSM Traitements de Surface et Mecanique. Method and assembly for depositing a metal on a cylindrical bore which passes through a central portion of a large part. 4,279,706, Cl. 204-26.000.

Blanc, Joseph: *See*—
Abrahams, Marvin S.; and Blanc, Joseph, 4,279,688, Cl. 156-613.000.

Blanco, Abelardo D.; Boynton, William W.; and Weber, Charles J., to International Business Machines Corporation. Print head image generator for printer subsystem. 4,279,199, Cl. 101-93.050.

Blank, Heinz U.: *See*—
Bonse, Gerhard; Blank, Heinz U.; Brandes, Wilhelm; and Paul, Volker, 4,279,921, Cl. 424-285.000.

Blaskowski, Henry J., to Combustion Engineering, Inc. Segmented ring header. 4,279,296, Cl. 165-134.00R.

Blaszkowski, Henry. Method and apparatus for forming soap bars with an embedded insert. 4,279,854, Cl. 264-275.000.

Blaupunkt-Werke GmbH: *See*—
Bragas, Peter, 4,280,149, Cl. 360-14.000.

Blazevic, Gertrud: *See*—
Scheubeck, Egmont; Blazevic, Gertrud; and Boehner, Marianne, 4,279,727, Cl. 204-195.00R.

Block, Franz-Rudolf, to ARBED Acieries Reunies de Burbach-Eich-Dudelange, Societe Anonyme. Process for measuring the level of metal in vessels, especially in continuous casting molds. 4,279,149, Cl. 73-290.00R.

Blomquist, James E.; and Wilczewski, Robert H. Dot matrix print head. 4,279,518, Cl. 400-124.000.

Bloomer, Ivan, to Carrier Drysys Limited. Paint spray booth with silencer means. 4,279,196, Cl. 98-115.0SB.

Blount, David H. Process for the production of polyisocyanate silicate plastics utilizing an alkali metal cellulose silicate condensation product. 4,280,006, Cl. 521-154.000.

Bluewater Terminal Systems N.V.: *See*—
van Heijst, Willem J., 4,279,047, Cl. 9-8.00P.

Blum, Jean, to Supra Fabrique d'Appareils de Chauffage et de Cuisine, S.A. Wood-fired fireplace. 4,279,239, Cl. 126-120.000.

Blumel, Reinhard; Denker, Jurgen; Markart, Ernst; Trapp, Werner; Tutzer, Michael; and Woznik, Reinhard, to Labora Mannheim GmbH fur Labortechnik. Apparatus for the analysis of test tape. 4,279,514, Cl. 356-445.000.

Bode, Gunter, to Schmalbach Lubeca GmbH. Equipment for mounting a screw-cap on a container. 4,279,114, Cl. 53-314.000.

Bodor, Nicholas S.; and Sloan, Kenneth B., to Intrex Research Corporation. Prodrugs for the improved delivery of halogen-containing glucocorticosteroids. 4,279,900, Cl. 424-241.000.

Boehmke, Gunther: *See*—
Schulze, Hans; Walz, Klaus; Jakobs, Karlhans; and Boehmke, Gunther, 4,279,614, Cl. 8-533.000.

Boehner, Marianne: *See*—
Scheubeck, Egmont; Blazevic, Gertrud; and Boehner, Marianne, 4,279,727, Cl. 204-195.00R.

Boehringer Mannheim GmbH: *See*—
Hagen, Alexander; Edelmann, Hermann; and Klose, Sigmar, 4,279,991, Cl. 435-4.000.

Boeing Company, The: *See*—
Chun, Randall K. B.; and Larsen, Donn E., 4,280,221, Cl. 375-17.000.

Boell, Walter: *See*—
Schoellkopf, Ulrich; Hausberg, Hans-Heinrich; Boell, Walter; May, Hans-Joachim; and Koenig, Horst, 4,280,008, Cl. 548-301.000.

Boeuf, Jean-Marie; Gerest, Pierre; and Lemaire, Henri, to Aimants Ugimag S.A. Process of preparing ferrite powders. 4,279,763, Cl. 252-62.580.

Bogachenko, Alexei G.: *See*—
Medovar, Boris I.; Baglai, Vitaly M.; Us, Vasily I.; Bogachenko, Alexei G.; Timashov, Grigory A.; Fedorovsky, Boris B.; Bondarenko, Oleg P.; Shtanko, Jury P.; Artamonov, Viktor L.; Pavlov, Leonid V.; Eltsov, Konstantin S.; Stetsenko, Nikolai V.; Kaganovsky, Gary P.; Korotkov, Albert N.; and Popov, Sergei S., 4,279,642, Cl. 75-10.00C.

Bogatzki, Hans-Ulrich. Solar collector assembly. 4,279,242, Cl. 126-443.000.

Boggio, Francesco; Bertone, Andrea; and Tumolo, Enzo, to WABCO Westinghouse Compagnia Italiana Segnali S.p.A. Speed control apparatus for railroad trains. 4,279,395, Cl. 246-182.00R.

Boguslaski, Robert C.; Burd, John F.; and Carrico, Robert J., to Miles Laboratories, Inc. Specific binding assay employing an enzyme-cleavable substrate as label. 4,279,992, Cl. 435-7.000.

Bohne, Franz-Josef: *See*—
Meisert, Ernst; Bohne, Franz-Josef; Brecht, Klaus; Mormann, Werner; Krohn, Wolfgang; and Henes, Gerhard, 4,280,007, Cl. 521-159.000.

Boise Cascade Corporation: *See*—
Lambuth, Alan L., 4,279,788, Cl. 260-9.000.

Boissonnet, Michel, to Societe a Responsabilite Limitee: Wichard. Snap shackle. 4,279,062, Cl. 24-305.000.

Boldt, Allyn L.: *See*—
Bray, Lane A.; and Boldt, Allyn L., 4,279,875, Cl. 423-249.000.

Bollmann, Jean-Jacques. Systems for anchoring structural members. 4,279,107, Cl. 52-169.130.

Bolt, Reginald C., to Molins Limited. Testing ventilated cigarettes. 4,279,144, Cl. 73-38.000.

Bolza-Schunemann, Hans B., to Koenig & Bauer Aktiengesellschaft. Folder for a web-fed rotary printing press. 4,279,410, Cl. 270-6.000.

Bom, Cornelis J. G.: *See*—
Van Der Lely, Cornelis; and Bom, Cornelis J. G., 4,279,138, Cl. 172-4.000.

Bondarenko, Oleg P.: *See*—
Medovar, Boris I.; Baglai, Vitaly M.; Us, Vasily I.; Bogachenko, Alexei G.; Timashov, Grigory A.; Fedorovsky, Boris B.; Bondarenko, Oleg P.; Shtanko, Jury P.; Artamonov, Viktor L.; Pavlov, Leonid V.; Eltsov, Konstantin S.; Stetsenko, Nikolai V.; Kaganovsky, Gary P.; Korotkov, Albert N.; and Popov, Sergei S., 4,279,642, Cl. 75-10.00C.

Bonsack, James P., to SCM Corporation. Process for treating chlorinated titaniferous material to remove vanadium. 4,279,871, Cl. 423-74.000.

Bonse, Gerhard; Blank, Heinz U.; Brandes, Wilhelm; and Paul, Volker, to Bayer Aktiengesellschaft. Dichloromaleic acid diamide derivatives and their use as fungicides. 4,279,921, Cl. 424-285.000.

Boomgaard, Ritse E.; Buter, Roelof; and Kiffen, Aleidus A., to Akzo NV. High solids pigmented coating composition containing a blend of ester diols and a curing agent. 4,279,800, Cl. 260-39.00P.

Borg-Warner Corporation: *See*—
Kim, Tong S.; and Lee, John S., 4,279,578, Cl. 418-97.000.
Lamarche, Paul E., 4,279,132, Cl. 64-27.00C.
Lee, Yong N., 4,279,298, Cl. 165-181.000.

Borsuk, Leslie M.; Ciardiello, Catherine R.; and Heath, Henry S., Jr., to International Telephone and Telegraph Corporation. Fiber optic connector. 4,279,467, Cl. 350-96.210.

Boschetti, Armando; and Snoek, David J., to Paul B. Elder Company. Ultraviolet light control. 4,279,254, Cl. 128-395.000.

Bosco, Peter M.; and Sledzieski, William L., to Standard Brands Incorporated. Low-fat, butter-flavored spread and process. 4,279,941, Cl. 426-602.000.

Bossa, Edoardo, deceased (by Ferzero, Maria Piera, Loriana Bossa, Ivo Bossa, legal representatives, heirs), to Covalca Plastici S.p.A. Anti-pollution and antifire floating barrier. 4,279,538, Cl. 405-66.000.

Boudreau, Jean A.: *See*—
Weinstein, Warren D.; Boudreau, Jean A.; and Gertz, Donald, 4,280,188, Cl. 364-566.000.

Bourhis, Yves; Wermelinger, Alain; and Kostelitz, Michel, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Expolitation des procedes Georges Claude. Plant for generating an atmosphere for the heat treatment of metals. 4,279,406, Cl. 266-81.000.

Bowman, George E.: *See*—
Brandl, Michael C.; Kataoka, David T.; and Bowman, George E., 4,279,320, Cl. 180-69.00R.

Bowsky, Benjamin, to Emerson Electric Co. Hermetic seal closure. 4,279,975, Cl. 429-181.000.

Boyle, Raymond F.; and Durigon, Docile D., to Westinghouse Electric Corp. Tritium removal and retention device. 4,279,700, Cl. 176-68.000.

Boynton, William W.: *See*—
Blanco, Abelardo D.; Boynton, William W.; and Weber, Charles J., 4,279,199, Cl. 101-93.050.

Bozzoli, Giorgio: *See*—
Gamberini, Giorgio; and Bozzoli, Giorgio, 4,279,079, Cl. 33-149.00J.

Bradley, Irving; and Vodicka, Vincent, to General Electric Company. Heat shield for plastic headlamp. 4,280,173, Cl. 362-294.000.

Bradley Time Division, Elgin National: *See*—
Mooney, Jac A., 4,280,209, Cl. 368-71.000.

Bradshaw, John: *See*—
Martin-Smith, Michael; Price, Barry J.; Bradshaw, John; and Clitherow, John W., 4,279,911, Cl. 424-251.000.
Price, Barry J.; Clitherow, John W.; and Bradshaw, John, 4,279,819, Cl. 260-326.50S.

Bradwell, Arthur R.; and Burnett, David, to University of Birmingham. Process for preparation of antisera. 4,279,884, Cl. 424-1.000.

Bragas, Peter, to Blaupunkt-Werke GmbH. Equipment for preventing gaps between previously recorded and newly recorded information on an information carrier. 4,280,149, Cl. 360-14.000.

Brandes, Wilhelm: *See*—
Bonse, Gerhard; Blank, Heinz U.; Brandes, Wilhelm; and Paul, Volker, 4,279,921, Cl. 424-285.000.

Brandl, Michael C.; Kataoka, David T.; and Bowman, George E., to International Harvester Company. Hand grip/filler neck recess for a tractor hood. 4,279,320, Cl. 180-69.00R.

Braun, Eric A., to Ex-Cell-O Corporation. Method and apparatus for packaging. 4,279,675, Cl. 156-73.100.

Braun, Peter D.; and Kosak, Wolodymyr, to Licentia Patent-Verwaltungs-G.m.b.H. Method for epitaxial deposition. 4,279,669, Cl. 148-175.000.

Bray, Lane A.; and Boldt, Allyn L., to Exxon Nuclear Company, Inc. Method of releasing fission gases from irradiated fuel. 4,279,875, Cl. 423-249.000.

Breault, Richard D.; Goller, Glen J.; Roethlein, Richard J.; and Sprecher, Gilbert C., to Electric Power Research Institute, Inc. Electrochemical cell including ribbed electrode substrates. 4,279,970, Cl. 429-35.000.

Brecht, Klaus: *See*—
Meisert, Ernst; Bohne, Franz-Josef; Brecht, Klaus; Mormann, Werner; Krohn, Wolfgang; and Henes, Gerhard, 4,280,007, Cl. 521-159.000.

Breed, Michal A.; and Prince, George T., to Allis-Chalmers Corporation. Adjustment for shift fork on a shift rail of a transmission. 4,279,175, Cl. 74-473.00R.

Bretaudiere, Jean-Pierre; and Prunenec, Paul. Centrifugal photometric analyzer. 4,279,862, Cl. 422-72.000.

Bridgestone Tire Co., Ltd.: *See*—
Wakana, Hiroshi; Yamada, Shigeru; and Sato, Akira, 4,279,966, Cl. 428-595.000.

Brighigna, Mario, to Stabilimenti Meccanici VM S.p.A. Hydrostatic unit with axial pistons having a variable stroke volume. 4,279,194, Cl. 91-483.000.

Brinkworth, Peter L. Cultivation of marine and aquatic species. 4,279,218, Cl. 119-2.000.

British Hovercraft Corporation Limited: *See*—
Wheeler, Raymond L.; Henry, John; and Dadswell, John E., 4,279,322, Cl. 180-128.000.

Bron, Dan. Fluid flow proportioning device. 4,279,267, Cl. 137-100.000.

Bronder, Joachim C., to Burroughs Corporation. Method and apparatus for making a wire stylus board. 4,279,075, Cl. 29-872.000.

Brooks, Cletus A., to Selective Feeder Company. Light responsive animal actuated apparatus. 4,279,219, Cl. 119-51.00R.

Brown, James R., to Beckman Instruments, Inc. Spectrophotometer with improved photomultiplier tube dark signal compensation. 4,279,510, Cl. 356-319.000.

Brown, Leon C.; Fitts, Uscoe J.; and Polakowski, David R., to International Business Machines Corporation. Copier and multifunction paper cassette. 4,279,504, Cl. 355-72.000.

Brown, Patricia A.: *See*—
United States of America, National Aeronautics and Space Administration; Brown, Patricia A.; and Danellis, Joan V., 4,279,906, Cl. 424-247.000.

Brown, Patrick, to International Standard Electric Corporation. Deflection-coil system for color picture tubes. 4,280,080, Cl. 315-368.000.

Brown, Roger K. Heat resistant alloy and method of manufacture. 4,279,645, Cl. 75-122.000.

Brubaker, Gaylen R., to FMC Corporation. Encapsulated bleaches and methods of preparing them. 4,279,764, Cl. 252-99.000.

Bruckner, Georg F.; Geike, Bernd; Schoen, Bernd-Jurgen; and Berger, Fritz, to Metzeler Schaum GmbH. Headprotector made of elastic material for athletes. 4,279,038, Cl. 2-425.000.

Bruhn, Peter E.; and Jensen, Finn U. H., to Lindab Platisol AB. Stop end piece particularly for gutters. 4,279,541, Cl. 405-119.000.

Brun, Andre G.; and Dutilleul, Henri T., to Compagnie Francaise des Petroles. Helical apparatus for coupling submerged pipes. 4,279,544, Cl. 405-202.000.

Brunelli, Maurizio: *See*—
Prevedello, Aldo; Brunelli, Maurizio; and Platone, Edoardo, 4,279,834, Cl. 260-464.000.

Brunken, Gerd; Eibl, Volker; and Fliege, Hans, to Sachs-Systemtechnik GmbH. Key-controlled electromagnetic operating mechanism for a lock and the like. 4,280,118, Cl. 340-147.0MD.

Bruzzese, Tiberio; and Ferrari, Rodolfo, deceased (by Ferrari, Lorenzo, executor), to SPA-Societa Prodotti Antibiotici S.p.A. Method of relieving pain and treating inflammatory conditions in warm-blooded animals. 4,279,926, Cl. 424-316.000.

Bucalo, Louis. Nerve stimulation method. 4,279,256, Cl. 128-419.00R.

Buchholz, Hans-Wilhelm. Endoprosthesis composed of a socket and a head receivable and lockable in the socket. 4,279,041, Cl. 3-1.912.

Buchholz, Rainer; Zodrow, Rudolf; and Rosenberg, Heinz J., to Jagenberg-Werke AG. Labeling station with glueing means for bottles or the like. 4,279,687, Cl. 156-568.000.

Buchmuller, Jurgen; Nobis, Peter; and Volker, Wolfgang, to Messer Griesheim GmbH. Apparatus for separating the gas which evaporates during the transfer of low-boiling liquified gases. 4,279,626, Cl. 55-204.000.

Buendia, Jean; and Vivat, Michel, to Roussel Uclaf. Novel lactones of cyclopentanols. 4,279,919, Cl. 424-279.000.

Buhl, Rainer; and Signer, Hans, to Balzers Aktiengesellschaft fur Hochvakuumtechnik und Dunne Schichten. Cathode shielded coating apparatus. 4,279,216, Cl. 118-723.000.

Bulpitt, Thomas H., to Kollmorgen Corporation. Spatial scanning means for a photometer. 4,279,507, Cl. 356-225.000.

Bundschuh, Robert; Thorne, George; and Cottis, David, to Cypress Gardens Skis. Heel assembly for water ski binder. 4,279,048, Cl. 9-310.0AA.

Bunes, Leonard A., to Dynapol. Polymeric red colors. 4,279,662, Cl. 106-289.000.

Bunge, Konrad: *See*—
Thurm, Siegfried; Bunge, Konrad; and Findeis, Gunter, 4,279,502, Cl. 355-38.000.

Bunker Ramo Corporation: *See*—
Makuch, John A.; and Monaghan, Kevin J., 4,279,466, Cl. 350-96.210.

Burcaw, Kenneth R.: *See*—
Kwasnoski, Daniel; Sterner, Charles J.; Horst, Russel J.; and Burcaw, Kenneth R., 4,279,703, Cl. 202-158.000.

Burd, John F.: *See*—
Boguslaski, Robert C.; Burd, John F.; and Carrico, Robert J., 4,279,992, Cl. 435-7.000.

Burnett, David: *See*—
Bradwell, Arthur R.; and Burnett, David, 4,279,884, Cl. 424-1.000.

Burnham, Robert D.: *See*—
Scifres, Donald R.; Burnham, Robert D.; and Streifer, William, 4,280,106, Cl. 331-94.50H.
Scifres, Donald R.; Burnham, Robert D.; and Streifer, William, 4,280,108, Cl. 331-94.50H.

Burroughs Corporation: *See*—
Baun, Kenneth W.; and Saunders, Jimmy G., 4,280,193, Cl. 364-900.000.
Bronder, Joachim C., 4,279,075, Cl. 29-872.000.
Krebs, Fred G.; and Abbott, Daniel B., 4,279,173, Cl. 74-441.000.
Siwik, Henry A.; and Kobylarz, Lawrence P., 4,279,413, Cl. 271-274.000.

Burroughs, Reginald L.; Thompson, William J.; and Wooldridge, Derek, to American Can Company. Reactor system and pump apparatus therein. 4,279,663, Cl. 127-1.000.

Buryakov, Valery M.; Kolotilov, Nikolai N.; Tokhunts, Roman D.; Yakovlev, Vladimir S.; Akulov, Vladislav A.; Zabotin, Viktor G.; Levin, Viktor Y.; Lukachev, Viktor P.; Pervyshin, Alexandr N.; Zaitsev, Konstantin A.; Karakov, Vladimir D.; and Khasanov, Mubaraksha D. Device for making emergency exits in a crushed transport means. 4,279,405, Cl. 266-55.000.

Busch, Bruce D., to Fremont Industries, Inc. Service descaler for aqueous systems. 4,279,768, Cl. 252-180.000.

Bushman, James B.; Dimond, James R.; and Hennessy, John, to Harco Corporation. Anode and method of construction. 4,279,729, Cl. 204-196.000.

Bushmeyer, Richard W.; and Schwabe, Thomas M., to J. I. Case Company. Segmented wheel clamp. 4,279,446, Cl. 301-20.000.

Bussen, Michael R.; and Winter, David F., to International Telephone and Telegraph Corporation. Wedge connector. 4,279,461, Cl. 339-246.000.

Buter, Roelof: *See*—
Boomgaard, Ritse E.; Buter, Roelof; and Kiffen, Aleidus A., 4,279,800, Cl. 260-39.00P.

Butruille, Yves: *See*—
Amicel, Charles; Biot, Bernard; Butruille, Yves; and Ollivier, Christian, 4,279,678, Cl. 156-169.000.

Buxbaum, Lothar: *See*—
Laely, Andreas; Zwahlen, Gunther; and Buxbaum, Lothar, 4,279,802, Cl. 260-40.00P.

Byk Gulden Lomberg Chemische Fabrik G.m.b.H.: *See*—
Eistetter, Klaus; Schaefer, Hartmann; and Menge, Heinz G., 4,279,918, Cl. 424-274.000.

Byrne, Desmond, legal representative: *See*—
Miller, Henry, deceased; and Byrne, Desmond, legal representative, 4,279,532, Cl. 404-68.000.

Byrne, Joe L.: *See*—
Egli, Hans; Byrne, Joe L.; and Nancarrow, James H., 4,279,570, Cl. 415-53.00T.

C-I-L Inc.: *See*—
Pollock, David C. I., 4,279,754, Cl. 210-608.000.

C. Van Der Lely N. V.: *See*—
Van Der Lely, Cornelis; and Bom, Cornelis J. G., 4,279,138, Cl. 172-4.000.

Cachier, Gerard; and Stevance, Jean, to Thomson-CSF. Millimeter wave source comprising an oscillator module and a variable-capacity module. 4,280,110, Cl. 331-107.0DP.

Caldwell, Donald L.: *See*—
McIntyre, John M.; and Caldwell, Donald L., 4,279,709, Cl. 204-98.000.

Cale, Albert D., Jr.; and Leonard, Charles A., to A. H. Robins Company, Inc. N-(1-Substituted-3-pyrrolidinyl)benzamides. 4,279,822, Cl. 260-326.470.

Callender, Robert E.; Doyle, Loren C.; and Lightel, William J., to United States of America, Army. Infrared viewer and spectral radiometer. 4,280,050, Cl. 250-330.000.

Calundann, Gordon W., to Celanese Corporation. Polyester of phenyl-4-hydroxybenzoic acid and 4-hydroxybenzoic acid and/or 6-hydroxy-2-naphthoic acid capable of forming an anisotropic melt. 4,279,803, Cl. 260-40.00P.

Cambiaso, Cesar L.: *See*—
Masson, Pierre L.; Cambiaso, Cesar L.; De Steenwinkel, Floris; and Leek, Adrian E., 4,279,617, Cl. 23-230.00B.

Cameron, John S. Ground-based portable and collapsible structures. 4,279,105, Cl. 52-71.000.

Camp, Richard H. Deceleration alert system. 4,280,116, Cl. 340-66.000.

Campbell, James R.; and Anspach, Roy L., to Mahoney, Thomas P.; Ruston, Donald A.; Barnes, Robert S.; Nance, Edward K., Jr.; Nance Childrens's Trust, The; Ruston, Gloria I.; O'Connor, Jeane; Ruston, Terri Lynn; Ruston, Donald Alan; Cislo, Donald M.; and Schick, George E., part interest to each. Apparatus for fabricating and welding core reinforced panel. 4,280,039, Cl. 219-78.110.

Campbell, Simon F., to Pfizer Inc. Quinazoline therapeutic agents. 4,279,910, Cl. 424-251.000.

Campbell, Thomas P., to Intercontinental Development Corporation. Method and apparatus for centrifugally separating a heavy fraction from a light weight fraction within a pulp material. 4,279,741, Cl. 209-44.000.

Canadian Patents & Development Ltd.: *See*—
Inculet, Ion I.; Castle, George S. P.; and Sullivan, John L., 4,279,625, Cl. 55-131.000

Cann, Peter L.; and Sacks, Paul S., to Carrier Corporation. Hot gas defrost system. 4,279,129, Cl. 62-278.000.

Canon Kabushiki Kaisha: *See*—
Kondo, Hideyo; and Murai, Keiichi, 4,279,500, Cl. 355-15.000.
Mashimo, Yukio; Iwashita, Tomonori; and Fukahori, Hidehiko, 4,279,490, Cl. 354-173.000.
Matsumura, Isao, 4,279,478, Cl. 351-13.000.
Tsunekawa, Tokuichi; Sakane, Toshio; and Taguchi, Tatsuya, 4,280,151, Cl. 360-33.000.
Yoshikawa, Ryoichi; Okajima, Kazuhiko; Nakahara, Shunichi; and Nakayama, Sumio, 4,279,494, Cl. 354-288.000.

Cantatore, Giuseppe; and Cassandrini, Paolo, to Chimosa Chimica Organica S.p.A. Piperidine compounds and their use as stabilizers for synthetic polymers. 4,279,804, Cl. 260-45.80N.

Canterbury, Bradford: *See*—
Ramirez, Peter R.; and Canterbury, Bradford, 4,279,401, Cl. 249-139.000.

Cantieri, Thomas B. Molded liner for pickup trucks. 4,279,439, Cl. 296-39.00R.

Cantrell, Mark: *See*—
Hopkins, Grant; and Cantrell, Mark, 4,279,429, Cl. 280-267.000.

Cardot, Frederic: *See*—
Feix, Jacques; and Cardot, Frederic, 4,280,043, Cl. 219-137.310.

Carey, Richard L.; and McGuffey, Gale W., to United States of America, Navy. Isolated DC voltage monitoring system. 4,280,097, Cl. 324-434.000.

Carlberg, David, to Engineering Systems Corp. Lockable cover assembly for push-button key pad. 4,280,025, Cl. 179-189.00D.

Carle, Arthur. Insecticidal natural bait composition and method of using same. 4,279,895, Cl. 424-127.000.

Carrico, Robert J.: *See*—
Boguslaski, Robert C.; Burd, John F.; and Carrico, Robert J., 4,279,992, Cl. 435-7.000.

Carrier Corporation: *See*—
Cann, Peter L.; and Sacks, Paul S., 4,279,129, Cl. 62-278.000.

Carrier Drysys Limited: *See*—
Bloomer, Ivan, 4,279,196, Cl. 98-115.0SB.

Cascade Corporation: *See*—
Weinert, Harry F., 4,279,564, Cl. 414-621.000.

Cassandrini, Paolo: *See*—
Cantatore, Giuseppe; and Cassandrini, Paolo, 4,279,804, Cl. 260-45.80N.

Casterwiler, Larry J.: *See*—
Sisoler, Gabriel M.; Spade, Vincent L.; Sowman, James P.; Casterwiler, Larry J.; and Puma, Bernard, 4,279,634, Cl. 65-182.300.

Castle, George S. P.: *See*—
Inculet, Ion I.; Castle, George S. P.; and Sullivan, John L., 4,279,625, Cl. 55-131.000.

Caterpillar Tractor Co.: *See*—
Grawey, Charles E., 4,279,285, Cl. 152-330.00R.
Harper, Robert W.; and Kleiber, Robert A., 4,279,348, Cl. 212-196.000.
Meisel, Thomas C., Jr., 4,279,318, Cl. 180-9.640.

Celanese Corporation: *See*—
Calundann, Gordon W., 4,279,803, Cl. 260-40.00P.

Centronics Data Computer Corp.: *See*—
Shiurila, John, 4,279,519, Cl. 400-124.000.

Cerberus AG: *See*—
Tar, Domokos, 4,280,058, Cl. 250-554.000.

Cha, Chang Y., to Occidental Oil Shale, Inc. Determining the locus of a processing zone in an oil shale retort by effluent off gas heating value. 4,279,302, Cl. 166-251.000.

Chabot, Francois: *See*—
Vert, Michel; Chabot, Francois; Leray, Jean; and Christel, Pascal, 4,279,249, Cl. 128-92.00D.

Challis, Louis A. Acoustic treatment for fans. 4,279,325, Cl. 181-211.000.

Chambers, William I., to NCR Corporation. Apparatus for advancing a record medium. 4,279,524, Cl. 400-564.100.

Champion International Corporation: *See*—
Austin, John J.; and Webinger, George, 4,279,933, Cl. 426-124.000.
Lohrbach, Mervin; and Peeples, Dick E., 4,279,379, Cl. 229-39.00R.
Montealegre, James, 4,279,373, Cl. 229-11.000.
Peeples, Dick E.; and Lohrbach, Mervin, 4,279,377, Cl. 229-39.00R.
Roccaforte, Harry I., 4,279,376, Cl. 229-38.000.

Webinger, George, 4,279,374, Cl. 229-34.00R.

Changani, Pushpkumar D.: *See—*
Baxter, Samuel; and Changani, Pushpkumar D., 4,279,848, Cl. 264-53.000.

Chao, Chente; Nakaji, Edward M.; and Bernick, Robert L., to United States of America, Air Force. Method of making integrated waveguide cavities. 4,279,070, Cl. 29-583.000.

Chapman, Lloyd R.; and Watton, John F., to General Motors Corporation. Application of an alumina coating to oxide whisker-covered surface on Al-containing stainless steel foil. 4,279,782, Cl. 252-465.000.

Charkey, Allen: *See—*
Dodin, Mark G.; and Charkey, Allen, 4,279,978, Cl. 429-248.000.

Chattem, Inc.: *See—*
Harris, Thomas C.; and Georgalas, Arthur, 4,279,890, Cl. 424-69.000.

Chauvelot, Alain: *See—*
Mangiavacchi, Jacques; Chauvelot, Alain; and Dolain, Claude, 4,279,528, Cl. 403-57.000.

Chemetron Corporation: *See—*
White, Kenneth T., 4,280,126, Cl. 340-621.000.

Chemplex Company: *See—*
Dombro, Robert A., 4,279,780, Cl. 252-452.000.

Chen, Henry, to Fabcon Incorporated. Rapid continuous clarifier. 4,279,747, Cl. 210-197.000.

Cheng, Paul J., to Phillips Petroleum Company. Carbon black production from solid carbonaceous feedstock. 4,279,881, Cl. 423-456.000.

Cherkasova, Evgenia E.: *See—*
Gladush, Vasily M.; Eremenko, Nena G.; Markina, Ljudmila V.; Kochuev, Evgeny S.; Krainik, Mikhail P.; Cherkasova, Evgenia E.; and Lyashenko, Nikolai M., 4,279,963, Cl. 428-433.000.

Cherry, John P.: *See—*
Gray, Marie S.; and Cherry, John P., 4,279,811, Cl. 260-123.500.

Chethik, Frank, to Ford Aerospace & Communications Corporation. Bit synchronizer with early and late gating. 4,280,224, Cl. 375-116.000.

Chianelli, Russell R.; and Pecoraro, Theresa, to Exxon Research & Engineering Co. Hydrodesulfurization over catalysts comprising chalcogenides of group VIII prepared by low temperature precipitation from nonaqueous solution. 4,279,737, Cl. 208-217.000.

Chiang, David. Method of and apparatus for operating stepping motors. 4,280,084, Cl. 318-696.000.

Chikama, Toshio, to Machida Endoscope Co., Ltd. Device for preventing clouding of an observing window. 4,279,246, Cl. 128-6.000.

Chimosa Chimica Organica S.p.A.: *See—*
Cantatore, Giuseppe; and Cassandrini, Paolo, 4,279,804, Cl. 260-45.80N.

Chino, Koichi; Yusa, Hideo; Oda, Akira; Miura, Hideichi; Horiuchi, Susumu; and Takamura, Yoshiyuki, to Hitachi, Ltd. Rotary vane type evaporator. 4,279,692, Cl. 159-6.00W.

Chisso Corporation: *See—*
Hayashi, Kohtaro; Morihara, Ko; and Nakamura, Kohji, 4,279,580, Cl. 425-72.00R.
Inukai, Takashi; Inoue, Hiromichi; Furukawa, Kenji; Sato, Hideo; and Sugimori, Shigeru, 4,279,770, Cl. 252-299.620.

Chlorine Engineers Corporation, Ltd.: *See—*
Satoh, Hitoshi; and Kosaka, Shohei, 4,279,712, Cl. 204-128.000.

Cho, Iue C., to Ralston Purina Company. Milk replacer for baking containing isolated vegetable protein. 4,279,939, Cl. 426-583.000.

Christel, Pascal: *See—*
Vert, Michel; Chabot, Francois; Leray, Jean; and Christel, Pascal, 4,279,249, Cl. 128-92.00D.

Christopher, Todd J., to RCA Corporation. Stylus position sensing apparatus for video disc player. 4,280,023, Cl. 369-43.000.

Chun, Randall K. B.; and Larsen, Donn E., to Boeing Company, The. Digital data communication system. 4,280,221, Cl. 375-17.000.

Chung, Thomas Y. Gel extruding method and apparatus. 4,279,361, Cl. 222-1.000.

Ciaperoni, Aldemaro; and Cucinella, Antonino, to Sniaviscosa Societa Nazionale Industria Applicazioni Viscosa, S.p.A. Self-extinguishing polymers. 4,279,652, Cl. 106-18.210.

Ciardiello, Catherine R.: *See—*
Borsuk, Leslie M.; Ciardiello, Catherine R.; and Heath, Henry S., Jr., 4,279,467, Cl. 350-96.210.

Ciba-Geigy Corporation: *See—*
Berner, Godwin, 4,279,720, Cl. 204-159.230.
Kirchmayr, Rudolf; and Felder, Louis, 4,279,721, Cl. 204-159.240.
Laely, Andreas; Zwahlen, Gunther; and Buxbaum, Lothar, 4,279,802, Cl. 260-40.00T.
Michaelis, Klaus P.; and Wirth, Hermann O., 4,279,761, Cl. 252-46.400.

Cioca, Gheorghe, to Seton Company. Process for preparing macromolecular biologically active collagen. 4,279,812, Cl. 260-123.700.

Cislo, Donald M.: *See—*
Campbell, James R.; and Anspach, Roy L., 4,280,039, Cl. 219-78.110.

Citizen Watch Co., Ltd.: *See—*
Nishikubo, Yasuhiko; and Sekine, Mitsuo, 4,280,210, Cl. 368-73.000.
Nomura, Yasushi, 4,280,208, Cl. 368-66.000.

Claeson, Karl G.; Aurell, Leif E.; Simonsson, Leif R.; and Arielly, Salo, to Kabi AB. Easily split substrates for the quantification of proteases. 4,279,810, Cl. 260-112.50R.

Clark Equipment Company: *See—*
Sagaser, Thomas M.; and Mather, Joseph M., 4,279,566, Cl. 414-686.000.

Clarke, William A.: *See—*
Stanwood, Jay W.; Clarke, William A.; and MacLeane, Johannes, 4,279,275, Cl. 138-109.000.

Classen, Alvin T. Sign post construction having reciprocable driver for placement and removal. 4,279,104, Cl. 52-38.000.

Cleary, John P., to Heineman, Ralph A. Machine tool column mount. 4,279,553, Cl. 408-135.000.

Clegg, Maurice A.: *See—*
Ruscoe, Michael J. H.; Sarkar, Kshitindra M.; and Clegg, Maurice A., 4,279,968, Cl. 428-677.000.

Clem, Arthur G., to American Colloid Company. Bentonite-gelled oil waterproofing composition. 4,279,547, Cl. 405-258.000.

Cleveland, Joseph J.: *See—*
Dziedzic, Chester J.; Cleveland, Joseph J.; and Newman, Ray L., 4,279,297, Cl. 165-165.000.

Click, Robert F. Method and apparatus for the recovery of refined petroleum products from pipeline mixtures. 4,279,738, Cl. 208-253.000.

Cline, Harvey E.: *See—*
Anthony, Thomas R.; and Cline, Harvey E., 4,279,667, Cl. 148-32.000.

Clitherow, John W.: *See—*
Martin-Smith, Michael; Price, Barry J.; Bradshaw, John; and Clitherow, John W., 4,279,911, Cl. 424-251.000.
Price, Barry J.; Clitherow, John W.; and Bradshaw, John, 4,279,819, Cl. 260-326.50S.

Clutter, Melvin E., to A. B. Chance Company. Insulator cover. 4,280,013, Cl. 174-5.00R.

Coast Catamaran Corporation: *See—*
Alter, Hobart L., 4,279,602, Cl. 440-63.000.

Cobel, George B.: *See—*
Skach, Edward J., Jr.; and Cobel, George B., 4,279,641, Cl. 75-0.50B.

Cobelli, Gabriel. Archery trainer and exercise device. 4,279,601, Cl. 434-247.000.

Cocco, Vincent L.; Norris, Philip R.; and Wareham, Richard R., to Polaroid Corporation. Microfiche system. 4,279,503, Cl. 355-45.000.

Coder, William D., Jr.: *See—*
Barden, Bruce L.; and Coder, William D., Jr., 4,279,953, Cl. 428-90.000.

Coiquaud, Michel, to Etablissements Simon Souillac. Process for manufacturing footwear from a plastic material such as polyurethane. 4,279,049, Cl. 12-142.00S.

Col, Martin H.; and Peters, Ronald L., to FMC Corporation. Fruit harvesting machine with bin filling system. 4,279,118, Cl. 56-329.000.

Colbert, Aaron; and Figiel, Francis J., to Allied Chemical Corporation. Azeotrope-like compositions of trichlorotrifluoroethane, acetone and cyclopentane. 4,279,665, Cl. 134-38.000.

Colbert, Aaron: *See—*
Figiel, Francis J.; and Colbert, Aaron, 4,279,664, Cl. 134-38.000.

Cole, Charles F., Jr.: *See—*
Hinshaw, Stanley E.; and Cole, Charles F., Jr., 4,279,078, Cl. 33-126.500.

Coleman, Ray L.: *See—*
Dienes, Edward K.; Coleman, Ray L.; and Hausberger, Arthur L., 4,279,781, Cl. 252-463.000.

Colgate-Palmolive Company: *See—*
Baines, Eric; and Harvey, Kenneth, 4,279,889, Cl. 424-57.000.

Collister, Richard L., Jr. Joint construction for log buildings. 4,279,108, Cl. 52-233.000.

Colombini, Ettore, to Northern Telecom Limited. Integrated optical wavelength demultiplexer. 4,279,464, Cl. 350-96.190.

Combustion Engineering, Inc.: *See—*
Blaskowski, Henry J., 4,279,296, Cl. 165-134.00R.

Comby, Georges; and Mangeot, Philippe, to Commissariat a l'Energie Atomique. Device for detecting and locating radiations, and in particular electron releasing phenomea. 4,280,075, Cl. 313-93.000.

Comerford, John; and Zimmer, Robert E., to Singer Company, The. Switch blade mechanism and multi-arrangement. 4,280,027, Cl. 200-6.00A.

ComGeneral Corporation: *See—*
Roettele, Donald L.; and Yohpe, William E., 4,280,223, Cl. 375-93.000.

Commander, Buck C. Solar assist and filter construction for dryer inlet. 4,279,082, Cl. 34-82.000.

Commissariat a l'Energie Atomique: *See—*
Comby, Georges; and Mangeot, Philippe, 4,280,075, Cl. 313-93.000.
Delapierre, Gilles; and Meyer, Robert, 4,279,475, Cl. 350-363.000.

Commonwealth Scientific and Industrial Research Organization: *See—*
Weiss, Donald E.; Kolarik, Luis O.; Priestley, Anthony J.; and Anderson, Nevil J., 4,279,756, Cl. 210-667.000.

Compagnie Francaise des Petroles: *See—*
Brun, Andre G.; and Dutilleul, Henri T., 4,279,544, Cl. 405-202.000.

Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme): *See—*
Villette, Jean, 4,280,156, Cl. 360-105.000.

Comparetto, John E.; and Hamilton, Richard A., Jr. Foldaway bed center. 4,279,046, Cl. 5-503.000.

Conant, Frank R.: *See—*
Jones, Dorothy L.; and Conant, Frank R., 4,279,936, Cl. 426-265.000.

Connell, G. A. Neville: *See—*
Scifres, Donald R.; Ponce, Fernando A.; Connell, G. A. Neville; and Streifer, William, 4,280,107, Cl. 331-94.50H.

Conoco, Inc.: *See*—
Hinshaw, Stanley E.; and Cole, Charles F., Jr., 4,279,078, Cl. 33-126.500.
Sekora, Robert H., 4,279,338, Cl. 198-525.000.

Container Corporation of America: *See*—
Gardner, Jeffrey M., 4,279,375, Cl. 229-37.00R.

Conti, Rino, to Dart Industries, Inc. Serving tray. 4,279,354, Cl. 220-23.830.

Convergence Corporation: *See*—
Bates, George W., 4,280,150, Cl. 360-14.000.

Cook, Henry S.: *See*—
Evrard, Gerald D.; Cook, Henry S.; and Kamalich, Anthony J., 4,279,052, Cl. 15-93.00A.

Cook, Roy O. Security device. 4,279,137, Cl. 70-416.000.

Copes-Vulcan, Inc.: *See*—
Seger, Fritz O., 4,279,274, Cl. 138-42.000.

Copley, Wayne: *See*—
Cormier, Edward J.; and Copley, Wayne, 4,279,562, Cl. 414-598.000.

Corcoran, John J.: *See*—
Hornak, Thomas; Corcoran, John J.; and Maslak, Samuel H., 4,280,196, Cl. 365-45.000.

Cormier, Edward J.; and Copley, Wayne. Bucket conveyor. 4,279,562, Cl. 414-598.000.

Coronelli, Carolina: *See*—
Pagani, Hermes; Parenti, Francesco; Coronelli, Carolina; and Tamoni, Giorgion, 4,280,001, Cl. 435-253.000.

Cottis, David: *See*—
Bundschuh, Robert; Thorne, George; and Cottis, David, 4,279,048, Cl. 9-310.0AA.

Coughlin, Robert W., to University Patents, Inc. Method of gasifying carbonaceous materials. 4,279,710, Cl. 204-101.000.

Coulon, Andre: *See*—
Blanc, Jacques; Coulon, Andre; and Pellus, Gilbert, 4,279,706, Cl. 204-26.000.

Coulson, Norman W., to Kerr-McGee Corporation. Process for recovering concentrated, purified tungsten values from brine. 4,279,869, Cl. 423-54.000.

Covalca Plastici S.p.A.: *See*—
Bossa, Edoardo, deceased, 4,279,538, Cl. 405-66.000.

Cox, Andrew G., to Manawatu Textile Dyers Limited. Dyeing, washing and/or milling. 4,279,135, Cl. 68-15.000.

Crafco, Inc.: *See*—
Jacobson, Carl C., Jr.; and Crosby, Gaius P., 4,279,056, Cl. 15-373.000.

Craig, Thomas A.: *See*—
Schink, Richard R.; and Craig, Thomas A., 4,279,269, Cl. 137-206.000.

Crask, Geoffrey J. Keyboard assembly with controllable key legends. 4,280,121, Cl. 340-365.0VL.

Crawford, Andrew S. Box frame for fabric prints and the like. 4,279,087, Cl. 40-158.00R.

Crompton & Knowles Corporation: *See*—
Smith, Howard L., 4,279,814, Cl. 260-173.000.

Crosby, Gaius P.: *See*—
Jacobson, Carl C., Jr.; and Crosby, Gaius P., 4,279,056, Cl. 15-373.000.

Crossland, William A., to International Standard Electric Corporation. Temperature responsive device. 4,279,152, Cl. 73-356.000.

Crossman, Richard L.; and Kirk, Richard L., to Goodyear Aerospace Corporation. Method and apparatus for fastening a friaction wear pad to a disk core member. 4,279,333, Cl. 188-218.0XL.

Crown Controls Corporation: *See*—
Dammeyer, Ned E., 4,280,205, Cl. 367-119.000.

Crown Zellerbach Corporation: *See*—
Reba, Imants, 4,279,610, Cl. 493-411.000.

CSELT Centro Studi e Laboratori Telecomunicazioni S.p.A.: *See*—
Babini, Giancarlo, 4,280,086, Cl. 320-1.000.

Csonka, Albert B.: *See*—
Csonka, John J.; and Csonka, Albert B., 4,279,223, Cl. 123-25.00N.

Csonka, John J.; and Csonka, Albert B. Internal combustion engine fuel-saving and pollution-reducing system. 4,279,223, Cl. 123-25.00N.

Cucinella, Antonino: *See*—
Ciaperoni, Aldemaro; and Cucinella, Antonino, 4,279,652, Cl. 106-18.210.

Culbertson, Billy M.; and Post, Larry K., to Ashland Chemical Company. Acrylic monomers containing carbamate functionality. 4,279,833, Cl. 260-464.000.

Cummins, Kozak and Gillman: *See*—
Kozak, Peter P., Jr.; and Gallup, Janet M., 4,280,000, Cl. 435-242.000.

Custom Packaging Systems: *See*—
LaFleur, Arthur E., 4,279,183, Cl. 83-16.000.

Cutler, John H.; and Walker, Loren H., to General Electric Company. Apparatus and method for providing a signal proportional to flux in an AC motor for control of motor drive current. 4,280,085, Cl. 318-803.000.

Cypress Gardens Skis: *See*—
Bundschuh, Robert; Thorne, George; and Cottis, David, 4,279,048, Cl. 9-310.0AA.

Czech, Franz; and Krieter, George-Heinz, to BBC Brown, Boveri & Company Limited. High-tension line. 4,280,015, Cl. 174-28.000.

Dadswell, John E.: *See*—
Wheeler, Raymond L.; Henry, John; and Dadswell, John E., 4,279,322, Cl. 180-128.000.

Daffern, George M., to Syva Company. Zero volume flow cell. 4,279,509, Cl. 356-246.000.

Dahlgrun, Rolf: *See*—
Reuland, Joachim; and Dahlgrun, Rolf, 4,280,187, Cl. 364-552.000.

Dai Nippon Toryo Co., Ltd.: *See*—
Makishima, Hiroshi; Toyoda, Tsunehiko; Okamura, Noriaki; Yano, Hirofumi; Mizoguchi, Akira; and Hiromori, Yasutaka, 4,279,653, Cl. 106-22.000.

Daicel Chemical Industries, Ltd.: *See*—
Ishii, Kiyoshi; Honda, Zenjiro; and Tsugaya, Hitoshi, 4,279,846, Cl. 264-41.000.

Daido Tokushuko Kabushiki Kaisha: *See*—
Kato, Tetsuo; Abeyama, Shozo; Kimura, Atsuyoshi; and Nakamura, Sadayuki, 4,279,646, Cl. 75-123.0AA.

Daimaru, Akimasa: *See*—
Ban, Keisuke; Arai, Takeo; and Daimaru, Akimasa, 4,279,289, Cl. 164-97.000.

Dallman, Alfred C. Automotive fuel saving system. 4,279,236, Cl. 123-573.000.

Dammeyer, Ned E., to Crown Controls Corporation. Ultrasonic fork height measuring apparatus. 4,280,205, Cl. 367-119.000.

Danellis, Joan V.: *See*—
United States of America, National Aeronautics and Space Administration; Brown, Patricia A.; and Danellis, Joan V., 4,279,906, Cl. 424-247.000.

Danjyo, Hiroyuki; and Mori, Masashi, to Shinagawa Refractories Co., Ltd. Method for the repair of runner for molten metal. 4,279,844, Cl. 264-30.000.

Dann, Bert H., to Bell & Howell Company. Time modulation pulse averaging demodulator. 4,280,100, Cl. 329-103.000.

Dart Industries, Inc.: *See*—
Conti, Rino, 4,279,354, Cl. 220-23.830.

Data Packaging Corporation: *See*—
Yonkers, Edward H., 4,279,522, Cl. 400-196.100.

Daudi, Anwar; Golata, John H.; and Triponi, Doarde G., to Motor Wheel Corporation. Method of wheel manufacture for correcting rotational non-uniformity of a pneumatic tire and wheel assembly. 4,279,287, Cl. 152-375.000.

Davidoff, Charles: *See*—
Winyall, Milton E.; and Davidoff, Charles, 4,279,879, Cl. 423-335.000.

Davies, David H.; and Norris, Geoffrey L. F., to Imperial Chemical Industries Limited. Streptomyces metabolite. 4,279,894, Cl. 424-122.000.

Day, Janet A.; Devlin, Barry R. J.; and Searle, Robert J. G., to Shell Oil Company. Process for preparing 3-azabicyclo(3.1.0)hexane-2-carboxylic acid. 4,279,821, Cl. 260-326.270.

Dayco Corporation: *See*—
Hetz, G. Brian, 4,279,276, Cl. 139-159.000.

Deakin, David A. Solar collector panel. 4,279,243, Cl. 126-450.000.

Deans, Allan J.: *See*—
Engdahl, Lawrence W.; and Deans, Allan J., 4,280,051, Cl. 250-363.00S.

DeBartolo, Paul: *See*—
Jaggi, Hans; Mathison, Pat; and DeBartolo, Paul, 4,279,055, Cl. 15-302.000.

DeBeuckelaer, Gerard; Jarre, Wolfgang; Wurmb, Rolf; and Marx, Matthias, to BASF Aktiengesellschaft. Process for separating hydrophobic organic liquids from water. 4,279,757, Cl. 210-671.000.

Decker, Werner: *See*—
Achelpohl, Fritz; and Decker, Werner, 4,279,686, Cl. 156-517.000.

Deforeit, Christian J. Polyphonic synthesizer of periodic signals using digital techniques. 4,279,186, Cl. 84-1.010.

Delapierre, Gilles; and Meyer, Robert, to Commissariat a l'Energie Atomique. Method of control of an electrolytic display cell and a circuit for the application of said method. 4,279,475, Cl. 350-363.000.

Della Croce, John B. Articulator. 4,279,595, Cl. 433-55.000.

Del Signore, James R., II: *See*—
Acharya, Rajguru M.; and Del Signore, James R., II, 4,280,082, Cl. 318-341.000.

DeLuca, Hector F.; Schnoes, Heinrich K.; Tanaka, Yoko; and Wichmann, Joseph K., to Wisconsin Alumni Research Foundation. 23,25-Dihydroxyvitamin D_3. 4,279,826, Cl. 260-397.200.

DelVecchio, Robert M.; and Meiksin, Zvi H., to University of Pittsburgh. Discontinuous metal and cermet film resistors and strain gauges. 4,280,114, Cl. 338-2.000.

Demoute, Jean-Pierre: *See*—
Martel, Jacques; Tessier, Jean; and Demoute, Jean-Pierre, 4,279,835, Cl. 260-465.00D.

de Niet, Edmond, to U.S. Philips Corporation. Magnetoresistive reading head. 4,280,158, Cl. 360-113.000.

Denker, Jurgen: *See*—
Blumel, Reinhard; Denker, Jurgen; Markart, Ernst; Trapp, Werner; Tutzer, Michael; and Woznik, Reinhard, 4,279,514, Cl. 356-445.000.

dePencier, Robert D. Combination stove and fireplace. 4,279,237, Cl. 126-77.000.

Derbyshire, Stewart, to Foseco International Limited. Coating compositions. 4,279,946, Cl. 427-133.000.

Derderian, George: *See*—
Marshall, Albert H.; and Derderian, George, 4,279,599, Cl. 434-21.000.

DeSimone, Robert S., to Hercules Incorporated. Aldehyde generators and foodstuffs containing such generators. 4,280,011, Cl. 568-603.000.

De Steenwinkel, Floris: *See*—
Masson, Pierre L.; Cambiaso, Cesar L.; De Steenwinkel, Floris; and Leek, Adrian E., 4,279,617, Cl. 23-230.00B.
Deszeri, Eszter: *See*—
Jovanovics, Karola; Szasz, Kalman; Kellner, Bela; Nemeth, Laszlo; Relle, Zsuzsa; Bittner, Emil; Deszeri, Eszter; and Eles, Janos, 4,279,915, Cl. 424-262.000.
Jovanovics, Karola; Szasz, Kalman; Kellner, Bela; Nemeth, Laszlo; Relle, Zsuzsa; Bittner, Emil; Deszeri, Eszter; and Eles, Janos, 4,279,916, Cl. 424-262.000.
Developak Corporation: *See*—
Evers, Jack R., 4,279,608, Cl. 493-247.000.
Devlin, Barry R. J.: *See*—
Day, Janet A.; Devlin, Barry R. J.; and Searle, Robert J. G., 4,279,821, Cl. 260-326.270.
Devlin, Charles L.: *See*—
Kure-Jensen, Jens; Gordon, Richard S.; Devlin, Charles L.; and Krings, Frederick C., 4,280,060, Cl. 290-40.00R.
DeVore, Steven R.: *See*—
Hutchison, Wayne A.; and DeVore, Steven R., 4,279,934, Cl. 426-262.000.
de Vries, Hendrik: *See*—
Kooi, Hessel; and de Vries, Hendrik, 4,279,604, Cl. 414-667.000.
de Werk, Karel J. C., to RSV-Gusto Engineering B.V. Device for sealing the lower part of a column standing on or in the bottom below a body of water with respect to the surrounding surface of the bottom. 4,279,545, Cl. 405-211.000.
Dexter Corporation, The: *See*—
Benson, Arthur L.; and Jordan, David A., 4,279,979, Cl. 429-254.000.
Dezseri, Eszter: *See*—
Jovanovics, Karola; Szasz, Kalman; Kellner, Bela; Nemeth, Laszlo; Relle, Zsuzsa; Bittner, Emil; Dezseri, Eszter; and Eles, Janos, 4,279,816, Cl. 260-244.400.
Dholakia, Anil R., to RCA Corporation. Selectively damped video disc stylus assembly. 4,280,024, Cl. 369-219.000.
Diacont, George P., Jr., to AMF Incorporated. Apparatus for holding and unfolding belt loop. 4,279,209, Cl. 112-104.000.
Diamond Shamrock Corporation: *See*—
Herbin, Jean E. E.; and Grammont, Paul D. A., 4,280,003, Cl. 521-31.000.
Didier Engineering GmbH: *See*—
Wagener, Dietrich; Horst, Fach; and Ergun, Hayri, 4,280,033, Cl. 219-10.55A.
Dieling, Hans; and Schindehutte, Manfred, to Wegmann & Co. Torsionally flexible railway truck frame. 4,279,202, Cl. 105-206.00R.
Dienes, Edward K.; Coleman, Ray L.; and Hausberger, Arthur L., to United Catalysts Inc. Catalyst for the synthesis of methanol. 4,279,781, Cl. 252-463.000.
Dierschke, Eugene G., to Texas Instruments Incorporated. High-radiance emitters with integral microlens. 4,279,690, Cl. 156-649.000.
Dieterich, Dieter, to Bayer Aktiengesellschaft. Process for the production of isocyanatoaryl sulfonic acids. 4,279,832, Cl. 260-453.00P.
Dietrich, William J., Sr., to DMI, Inc. High speed tiller with widely spaced discs. 4,279,311, Cl. 172-509.000.
Dijkmans, Eise C.: *See*—
van de Plassche, Rudy J.; and Dijkmans, Eise C., 4,280,089, Cl. 323-354.000.
Diker, Charles M.: *See*—
Moe, Walter; and Diker, Charles M., 4,279,527, Cl. 401-277.000.
Dilg, Carl W. Shoe construction with replaceable sole. 4,279,083, Cl. 36-101.000.
Dimond, James R.: *See*—
Bushman, James B.; Dimond, James R.; and Hennessy, John, 4,279,729, Cl. 204-196.000.
Dinardo, Joseph J.: *See*—
Palazzolo, Paul H.; and Dinardo, Joseph J., 4,279,110, Cl. 52-302.000.
Dinger, Edward H.; and Ritter, Allen M., to General Electric Company. Motor drive system with inertia compensation. 4,280,081, Cl. 318-6.000.
Djorup, Robert S. Directional heat loss anemometer transducer. 4,279,147, Cl. 73-189.000.
DMI, Inc.: *See*—
Dietrich, William J., Sr., 4,279,311, Cl. 172-509.000.
Dodin, Mark G.; and Charkey, Allen, to Energy Research Corporation. Battery separator employing zinc selective additive materials. 4,279,978, Cl. 429-248.000.
Doi, Toshiaki; Suematsu, Shigeru; Nishida, Chikamasa; and Hiranuma, Hiroshi, to Hitachi, Ltd. Nuclear reactor operation control process. 4,279,698, Cl. 176-22.000.
Dolain, Claude: *See*—
Mangiavacchi, Jacques; Chauvelot, Alain; and Dolain, Claude, 4,279,528, Cl. 403-57.000.
Dolan, Bernard J.: *See*—
McKinley, Ronald R.; Hamel, Robert E., Jr.; and Dolan, Bernard J., 4,280,122, Cl. 340-380.000.
Dolan-Jenner Industries, Inc.: *See*—
McKinley, Ronald R.; Hamel, Robert E., Jr.; and Dolan, Bernard J., 4,280,122, Cl. 340-380.000.
Dolhyj, Serge R.: *See*—
Velenyi, Louis J.; Paparizos, Christos; and Dolhyj, Serge R., 4,279,829, Cl. 260-429.900.
Dolman, Roy S.: *See*—
Tomlinson, Geoffrey E. S.; and Dolman, Roy S., 4,279,180, Cl. 82-1.00C.
Dombro, Robert A., to Chemplex Company. Method of preparing catalyst supports. 4,279,780, Cl. 252-452.000.
Doryokuro Kakunenryo Kaihatsu Jigyodan: *See*—
Fukada, Tomihiro; and Kamei, Mitsuru, 4,279,160, Cl. 73-708.000.
Douglas Dynamics Inc.: *See*—
Miller, Richard R.; and Simi, Edward A., 4,280,062, Cl. 307-10.0LS.
Douglas, George H.: *See*—
Riley, Richard L.; Douglas, George H.; and Yelnosky, John, 4,279,928, Cl. 424-324.000.
Douglas, Owen. Fluid support system for a medical patient. 4,279,044, Cl. 5-453.000.
Dow Chemical Company, The: *See*—
Huang, Cleo L., 4,279,994, Cl. 435-19.000.
Lewis, John W., 4,280,029, Cl. 200-50.00R.
McIntyre, John M.; and Caldwell, Donald L., 4,279,709, Cl. 204-98.000.
Nelson, Alfred R.; and Johnsen, Kenneth E., 4,279,797, Cl. 260-33.40R.
Skach, Edward J., Jr.; and Cobel, George B., 4,279,641, Cl. 75-0.50B.
Dow Corning Corporation: *See*—
Homan, Gary R.; and Lee, Chi-long, 4,279,792, Cl. 260-18.00S.
Kehrer, Gerald P.; and Smith, William G., 4,279,783, Cl. 252-511.000.
Lee, Denis C.; and Rathjen, Arthur H., 4,279,259, Cl. 128-774.000.
Dow Corning Limited: *See*—
Hill, Michael P. L.; and Tizard, Anthony N., 4,279,765, Cl. 252-117.000.
Dow, Judith A.; and Fohl, Timothy, to GTE Products Corporation. Lamp with protective coating and method of applying same. 4,279,590, Cl. 431-360.000.
Doyle, Gerald, to Exxon Research & Engineering Co. Cu(1) Acetylacetonate complexes for CO separation. 4,279,874, Cl. 423-246.000.
Doyle, Loren C.: *See*—
Callender, Robert E.; Doyle, Loren C.; and Lightel, William J., 4,280,050, Cl. 250-330.000.
Dresser Industries, Inc.: *See*—
Helmick, James E., 4,279,316, Cl. 175-371.000.
Kunderman, Fred K., 4,279,574, Cl. 417-243.000.
Morris, Jerald D., 4,279,450, Cl. 308-8.200.
Paul, Donald G.; and Berriman, Lester P., 4,279,627, Cl. 55-238.000.
Rogers, James B., 4,279,122, Cl. 59-10.000.
Drew, Daniel C., to American Aquatic Concepts and Enterprises, Inc. Swim cap with integral eye protection. 4,279,039, Cl. 2-428.000.
Drexler, Jerome; and Betz, Carl R., to Drexler Technology Corporation. Gelatin-epoxy sheet materials. 4,279,989, Cl. 430-531.000.
Drexler Technology Corporation: *See*—
Drexler, Jerome; and Betz, Carl R., 4,279,989, Cl. 430-531.000.
Druffel, Erich, to Durkoppwerke GmbH. Looper thread tension device. 4,279,210, Cl. 112-181.000.
Duby, Paul F.: *See*—
Vining, Paul H.; Scott, Jack A.; and Duby, Paul F., 4,279,711, Cl. 204-105.00R.
Duckworth, Edward D., to A. Johnson and Company (London) Limited. Scraped-surface heat exchanger. 4,279,295, Cl. 165-94.000.
Dumas, David H., to Hercules Incorporated. Sizing method and sizing composition for use therein. 4,279,794, Cl. 260-29.2EP.
Du Pont de Nemours, E. I., and Company: *See*—
Friar, Lawrence B.; and Smith, Kenneth M., 4,279,644, Cl. 75-118.00P.
Payne, Robert H.; and Rackley, Robert L., 4,279,053, Cl. 15-159.00A.
Smeltz, Kenneth C.; and Strickler, Charles L., 4,279,960, Cl. 428-290.000.
Duracell International Inc.: *See*—
Moses, Peter R., 4,279,972, Cl. 429-50.000.
Durigon, Docile D.: *See*—
Boyle, Raymond F.; and Durigon, Docile D., 4,279,700, Cl. 176-68.000.
Durkoppwerke GmbH: *See*—
Druffel, Erich, 4,279,210, Cl. 112-181.000.
Duro-Test Corporation: *See*—
Walsh, Peter, 4,280,076, Cl. 313-114.000.
Dutilleul, Henri T.: *See*—
Brun, Andre G.; and Dutilleul, Henri T., 4,279,544, Cl. 405-202.000.
Duwel, Edward C.: *See*—
Eckert, Alton B.; Duwel, Edward C.; and Soderberg, John H., 4,280,180, Cl. 364-464.000.
Dworkin, Robert D., to M&T Chemicals Inc. Synergistic heat stabilizer compositions containing an antimony or a bismuth compound. 4,279,807, Cl. 260-45.75B.
Dyer, Robert F.; Lewis, J. Stephen; Rosenthal, Janice E.; Mills-Winkler, James P.; and Schroeder, Robert F., to Mattel, Inc. Figure toy. 4,279,099, Cl. 46-119.000.
Dynamit Nobel Aktiengesellschaft: *See*—
Pastura, Albino; Kelbch, Gerhard; and Hulsmann, Hans-Leo, 4,280,012, Cl. 568-755.000.
Dynapol: *See*—
Bunes, Leonard A., 4,279,662, Cl. 106-289.000.
Dynasciences Corporation: *See*—
Lindsay, Gene K.; and O'Beirne, Andrew J., 4,279,774, Cl. 252-408.000.

Dziedzic, Chester J.; Cleveland, Joseph J.; and Newman, Ray L., to GTE Products Corporation. Housing for ceramic heat recuperators and assembly. 4,279,297, Cl. 165-165.000.

E & E Seegmiller Limited: *See—*
Altmayer, Joseph, 4,279,068, Cl. 29-252.000.

E. R. Squibb & Sons, Inc.: *See—*
Hauck, Frederic P.; and Jacobs, Glenn A., 4,279,902, Cl. 424-246.000.

E-Systems, Inc.: *See—*
Gordy, Robert S.; Poston, Billy R.; and Sanders, David E., 4,280,218, Cl. 371-6.000.

Eastman Kodak Company: *See—*
Audran, Roger G. L.; and Huguenard, Albert P., 4,279,945, Cl. 427-130.000.
Ewald, William P., 4,279,988, Cl. 430-499.000.
Foster, Charles H., 4,279,828, Cl. 260-397.250.
Hines, Stephen P., 4,279,488, Cl. 354-145.000.
Hines, Stephen P., 4,279,492, Cl. 354-187.000.
Jessop, Thomas C., 4,279,861, Cl. 422-67.000.
Swapceinski, John P., 4,279,942, Cl. 427-14.100.

Ebata, Sakae; Watari, Masahide; Hayakumo, Sunao; and Oyamada, Osamu, to Hitachi, Ltd. Shield wall for surrounding reactor containment vessel for nuclear reactor and method for constructing the same. 4,279,701, Cl. 176-87.000.

Ebauches Electroniques SA: *See—*
Leuthold, Oskar, 4,280,175, Cl. 363-127.000.

Eberhardt, Mark E., Jr.: *See—*
McCord, Dick P.; and Eberhardt, Mark E., Jr., 4,279,317, Cl. 177-185.000.

Eckberg, Richard P.; and LaRochelle, Ronald W., to General Electric Company. Ultraviolet curable epoxy silicone coating compositions. 4,279,717, Cl. 204-159.130.

Eckels, Phillip W., to Westinghouse Electric Corp. Vapor trap and regulator for superconductive turbogenerators. 4,280,071, Cl. 310-52.000.

Eckert, Alton B.; Duwel, Edward C.; and Soderberg, John H., to Pitney Bowes Inc. Electronic postage meter having field resettable control values. 4,280,180, Cl. 364-464.000.

Eda, Tadahiro; Tatsumi, Susumu; Imai, Chikara; and Koichi, Yasushi, to Ricoh Company, Ltd. Electrostatographic copying apparatus with automatic toner density control. 4,279,498, Cl. 355-14.00D.

Edelmann, Hermann: *See—*
Hagen, Alexander; Edelmann, Hermann; and Klose, Sigmar, 4,279,991, Cl. 435-4.000.

Edwards, Alfred R.: *See—*
Leniger, David J., 4,279,128, Cl. 62-238.600.

Edwards, Jesse B. Firearm recoil reducer. 4,279,091, Cl. 42-1.00V.

Effenberger, Alfred; and Staehle, Hermann, to Staehle Maschinenbau GmbH. Extruder with exchangeable housing insert. 4,279,515, Cl. 366-76.000.

Egami, Tetsufumi, to Shimano Industrial Company Limited. Front derailleur for a bicycle. 4,279,605, Cl. 474-82.000.

Egan, James L., to Algoma Steel Corporation, Limited, The. Apparatus for changing tuyeres on a blast furnace. 4,279,408, Cl. 266-271.000.

Ege, Sigmund, to International Standard Electric Corporation. Fire resistant electric cable. 4,280,016, Cl. 174-102.00R.

Egee, Raymond: *See—*
Berger, Jean-Yves; Kostelitz, Michel; Reynaud, Bernard; and Egee, Raymond, 4,280,042, Cl. 219-121.0PT.

Egli, Hans; Byrne, Joe L.; and Nancarrow, James H., to Garrett Corporation, The. Energy transfer machine. 4,279,570, Cl. 415-53.00T.

Ehlers, Klaus-Peter: *See—*
Schrodter, Klaus; Gradl, Reinhard; Ehlers, Klaus-Peter; and Scheibitz, Wolfgang, 4,279,876, Cl. 423-305.000.

Eibl, Volker: *See—*
Brunken, Gerd; Eibl, Volker; and Fliege, Hans, 4,280,118, Cl. 340-147.0MD.

Eich, Richard A.: *See—*
Strobel, Rudolf G. K.; and Eich, Richard A., 4,279,937, Cl. 426-424.000.

Eigenmann, Ludwig, to Owens-Illinois, Inc. Method and apparatus for applying horizontal road marking material of high optical efficiency. 4,279,534, Cl. 404-72.000.

Eisenbraun, Allan A.: *See—*
Hornbaker, Edwin D.; and Eisenbraun, Allan A., 4,279,808, Cl. 260-45.75B.

Eisenhart, Robert L. Electrical coupler. 4,280,112, Cl. 333-21.00R.

Eisenhauer, Bernhard: *See—*
Meyer, Rainer-Leo; John, Rainmar; Eisenhauer, Bernhard; and Baumstark, Herta, 4,279,962, Cl. 428-332.000.

Eistetter, Klaus; Schaefer, Hartmann; and Menge, Heinz G., to Byk Gulden Lomberg Chemische Fabrik G.m.b.H. 2-(Nuclearly-substituted)benzylpyrrolidines. 4,279,918, Cl. 424-274.000.

El Paso Polyolefins Company: *See—*
Allan, John L. H.; Finestone, Arnold B.; and Roderick, John J., 4,279,809, Cl. 260-45.95C.

El Paso Products Company: *See—*
Finch, Ray N.; and Nash, William D., 4,279,130, Cl. 62-544.000.

Elastogran Maschinenbau GmbH & Co.: *See—*
Wallner, Josef; and Metzinger, Lothar, 4,279,517, Cl. 366-177.000.

Elchinger, Gilbert M., to Polaroid Corporation. Mobility cane for the blind incorporating ultrasonic obstacle sensing apparatus. 4,280,204, Cl. 367-116.000.

Electric Power Research Institute, Inc.: *See—*
Breault, Richard D.; Goller, Glen J.; Roethlein, Richard J.; and Sprecher, Gilbert C., 4,279,970, Cl. 429-35.000.

Electronic Corporation of America: *See—*
Weiner, Nathan K.; Weyman, Peter J.; and Ketchum, David D., 4,280,184, Cl. 364-506.000.

Eles, Janos: *See—*
Jovanovics, Karola; Szasz, Kalman; Kellner, Bela; Nemeth, Laszlo; Relle, Zsuzsa; Bittner, Emil; Dezseri, Eszter; and Eles, Janos, 4,279,816, Cl. 260-244.400.
Jovanovics, Karola; Szasz, Kalman; Kellner, Bela; Nemeth, Laszlo; Relle, Zsuzsa; Bittner, Emil; Deszeri, Eszter; and Eles, Janos, 4,279,915, Cl. 424-262.000.
Jovanovics, Karola; Szasz, Kalman; Kellner, Bela; Nemeth, Laszlo; Relle, Zsuzsa; Bittner, Emil; Deszeri, Eszter; and Eles, Janos, 4,279,916, Cl. 424-262.000.

Elizalde, Pete, Jr.: *See—*
Hawke, Merrill P.; Elizalde, Pete, Jr.; and Harris, Robert L., 4,279,164, Cl. 73-826.000.

Elleman, Daniel D.: *See—*
United States of America, National Aeronautics and Space Administration; Wang, Taylor G.; and Elleman, Daniel D., 4,279,632, Cl. 65-21.400.

Ellett, Edwin W. Operating room surgical lamp. 4,280,167, Cl. 362-33.000.

Elmqvist, Orvar. Blank pipe for manufacture. 4,279,965, Cl. 428-582.000.

Elsner, Emil, to Korf-Stahl AG. Metallurgical furnace in particular an electric arc furnace. 4,279,407, Cl. 266-193.000.

Eltsov, Konstantin S.: *See—*
Medovar, Boris I.; Baglai, Vitaly M.; Us, Vasily I.; Bogachenko, Alexei G.; Timashov, Grigory A.; Fedorovsky, Boris B.; Bondarenko, Oleg P.; Shtanko, Jury P.; Artamonov, Viktor L.; Pavlov, Leonid V.; Eltsov, Konstantin S.; Stetsenko, Nikolai V.; Kaganovsky, Gary P.; Korotkov, Albert N.; and Popov, Sergei S., 4,279,642, Cl. 75-10.00C.

Ema, Shigeo: *See—*
Tsuzuki, Kunihiko; Ogasawara, Norio; and Ema, Shigeo, 4,279,619, Cl. 44-56.000.

Emerson Electric Co.: *See—*
Bowsky, Benjamin, 4,279,975, Cl. 429-181.000.
Gryn, Felix J.; and Young, James E., 4,279,166, Cl. 73-861.120.

Emmons, William D.: *See—*
Falgiatore, Dominic R.; and Emmons, William D., 4,279,959, Cl. 428-288.000.

Energy Research Corporation: *See—*
Dodin, Mark G.; and Charkey, Allen, 4,279,978, Cl. 429-248.000.

Energy Synergistics, Inc.: *See—*
Wymer, Robert L.; and Prater, Perry, 4,279,628, Cl. 55-238.000.

Engdahl, Lawrence W.; and Deans, Allan J., to Picker Corporation. Scintillation crystal mounting apparatus. 4,280,051, Cl. 250-363.00S.

Engel, Robert R.; Sarin, Virender K.; Gotlinksy, Barry; Tropp, Burton E.; and Parker, Thomas S., to Research Foundation of the City University of New York. In vivo inhibitors of cholesterol biosynthesis. 4,279,898, Cl. 424-217.000.

Engeler, William E.; and Tiemann, Jerome J., to General Electric Company. Charge transfer apparatus. 4,280,066, Cl. 307-221.00D.

Engelmann, Rudolph H. Indicia producing method. 4,279,852, Cl. 264-227.000.

Engineering Systems Corp.: *See—*
Carlberg, David, 4,280,025, Cl. 179-189.00D.

England, Charles J.; and Bakewell, Brian A., to Monotype Corporation Limited, The. Electro-optical character generator for photocomposing apparatus. 4,279,483, Cl. 354-5.000.

Enomoto, Hidekazu: *See—*
Ohta, Ryozo; Yoshizawa, Tadao; Sakaguchi, Masayuki; Hara, Yoshiaki; Kyomen, Junsuke; Yoneda, Ryuichi; and Enomoto, Hidekazu, 4,279,853, Cl. 264-230.000.

Enos, Gary. Nuclear imaging phantom. 4,280,047, Cl. 250-252.000.

Entel Corporation: *See—*
Yuan, William K. C., 4,280,021, Cl. 179-84.00C.

Epstein, Ira J. Portable electric drill guide. 4,279,552, Cl. 408-112.000.

Equipment Company of America: *See—*
Thompson, Larry J., 4,279,567, Cl. 414-785.000.

Erb, Tom L.; and Miller, Wendell D., to Ramsey Engineering Company. Liquid coupling for doppler sonic flowmeter. 4,279,167, Cl. 73-861.250.

Erbstoesser, Steven R., to Exxon Production Research Company. Polyurethane ball sealers for well treatment fluid diversion. 4,279,303, Cl. 166-284.000.

Erdmann, Francis M.: *See—*
Beguwala, Moiz M. E.; and Erdmann, Francis M., 4,279,069, Cl. 29-571.000.

Eremenko, Nena G.: *See—*
Gladush, Vasily M.; Eremenko, Nena G.; Markina, Ljudmila V.; Kochuev, Evgeny S.; Krainik, Mikhail P.; Cherkasova, Evgenia E.; and Lyashenko, Nikolai M., 4,279,963, Cl. 428-433.000.

Ergun, Hayri: *See—*
Wagener, Dietrich; Horst, Fach; and Ergun, Hayri, 4,280,033, Cl. 219-10.55A.

Erickson, John W., to Kobe, Inc. Pitot pump with fluid lubricated bearings. 4,279,571, Cl. 415-89.000.

Ernest, Michael V.: *See—*
Sanchez, Moises G.; Ernest, Michael V.; and Laine, Norman R., 4,279,779, Cl. 252-448.000.

Ernst Kaull & Co. GmbH: *See—*
Grunbacher, Martin, 4,279,485, Cl. 354-51.000.

Erpenbach, Heinz; Guhrmann, Klaus; and Joest, Herbert. Continuous production of 2-ethyl-hexyl acrylate free from dioctylether. 4,280,009, Cl. 560-205.000.

Erpenbach, Heinz; Gehrmann, Klaus; Kubbeler, Hans-Klaus; and Lork, Winfried, to Hoechst Aktiengesellschaft. Continuous production of alkyl acrylates free from ether. 4,280,010, Cl. 560-205.000.

Ersoy, Okan K., to Sentralinstitutt for Industriell Forskning. Method of holographic processing of waves. 4,279,462, Cl. 350-3.600.

Esenwein, Fred D.: *See—*
Havas, George; and Esenwein, Fred D., 4,280,038, Cl. 219-10.770.

Esser, Reinhard, to J. M. Voith GmbH. Process and apparatus for coating webs and adjusting the wet application weight of the coating material. 4,279,949, Cl. 427-356.000.

Essex County Council: *See—*
Schnurr, Lewis E., 4,280,020, Cl. 179-2.0EA.

Essilor International Cie Generale d'Optique: *See—*
Bettiol, Bruno; Harsigny, Christian; and Lenne, William, 4,279,480, Cl. 351-159.000.

Etablissements Simon Souillac: *See—*
Coiquaud, Michel, 4,279,049, Cl. 12-142.00S.

Ethyl Corporation: *See—*
Hornbaker, Edwin D.; and Eisenbraun, Allan A., 4,279,808, Cl. 260-45.75B.
King, Roderick V., 4,279,350, Cl. 215-228.000.

Euteco S.p.A.: *See—*
Merli, Claudio; and Francia, Carlo, 4,279,286, Cl. 152-353.00R.

Evans, John V.; and Matthews, Ralph W., to Australian Atomic Energy Commission. Technetium-99m generators. 4,280,053, Cl. 250-432.0PD.

Everroad, Herbert L. Method and apparatus for testing air filters and the like. 4,279,508, Cl. 356-237.000.

Evers, Jack R., to Developak Corporation. Bag bottom forming machine and transfer apparatus. 4,279,608, Cl. 493-247.000.

Evrard, Gerald D.; Cook, Henry S.; and Kamalich, Anthony J., to Southwire Co.; and National Steel Corp. Flue wall coke build-up removal device. 4,279,052, Cl. 15-93.00A.

Ewald, William P., to Eastman Kodak Company. Photographic film unit. 4,279,988, Cl. 430-499.000.

Ex-Cell-O Corporation: *See—*
Braun, Eric A., 4,279,675, Cl. 156-73.100.

Exxon Nuclear Company, Inc.: *See—*
Bray, Lane A.; and Boldt, Allyn L., 4,279,875, Cl. 423-249.000.

Exxon Production Research Company: *See—*
Erbstoesser, Steven R., 4,279,303, Cl. 166-284.000.
Wirsch, Michael J., 4,279,300, Cl. 166-90.000.

Exxon Research & Engineering Co.: *See—*
Bellows, Richard J.; and Grimes, Patrick G., 4,279,732, Cl. 204-269.000.
Chianelli, Russell R.; and Pecoraro, Theresa, 4,279,737, Cl. 208-217.000.
Doyle, Gerald, 4,279,874, Cl. 423-246.000.
Klemann, Lawrence P.; and Newman, Gerald H., 4,279,976, Cl. 429-197.000.

Ezaki, Akira; Kobayashi, Yoshiaki; and Hayashi, Sigeaki, to Sharp Kabushiki Kaisha. Visual angle adjustable portable cash register. 4,280,034, Cl. 235-1.00D.

F. lli Marzoli & C. S.p.A.: *See—*
Marzoli, Angelo, 4,279,119, Cl. 57-124.000.

F. Lli Zucchini: *See—*
Zucchini, Guido, 4,279,456, Cl. 339-32.00R.

Fabcon Incorporated: *See—*
Chen, Henry, 4,279,747, Cl. 210-197.000.

Facet Enterprises, Inc.: *See—*
Miller, Donald L., 4,280,073, Cl. 310-77.000.

Fahmy, Mohamed A. H.; and Fukuto, Tetsuo R., to University of California, The Regents of the. (Alkoxycarbonyl)(alkyl)aminosulfenyl derivatives of phosphoramidothioate esters. 4,279,897, Cl. 424-211.000.

Fairchild Camera & Instrument Corp.: *See—*
Vaeches, Theodore A., 4,280,220, Cl. 371-27.000.

Fairchild Industries, Inc.: *See—*
Miller, Matthew N., 4,279,195, Cl. 92-88.000.

Falgiatore, Dominic R.; and Emmons, William D., to Rohm and Haas Company. Water-insoluble copolymers containing amide-polyaldehyde thermosettable system. 4,279,959, Cl. 428-288.000.

Farrington, Gregory C., to General Electric Company. Humidity sensor. 4,280,115, Cl. 338-35.000.

Fedorovsky, Boris B.: *See—*
Medovar, Boris I.; Baglai, Vitaly M.; Us, Vasily I.; Bogachenko, Alexei G.; Timashov, Grigory A.; Fedorovsky, Boris B.; Bondarenko, Oleg P.; Shtanko, Jury P.; Artamonov, Viktor L.; Pavlov, Leonid V.; Eltsov, Konstantin S.; Stetsenko, Nikolai V.; Kaganovsky, Gary P.; Korotkov, Albert N.; and Popov, Sergei S., 4,279,642, Cl. 75-10.00C.

Feix, Jacques; and Cardot, Frederic, to L'Air Liquide, Scoiete Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude. Welding torch with mechanical and pneumatic cleaning. 4,280,043, Cl. 219-137.310.

Felder, Louis: *See—*
Kirchmayr, Rudolf; and Felder, Louis, 4,279,721, Cl. 204-159.240.

Felsvang, Karsten S.; Hansen, Ove E.; and Rasmussen, Elisabeth L., to A/S Niro Atomizer. Process for flue gas desulfurization. 4,279,873, Cl. 423-242.000.

Ferag AG: *See—*
Glatz, Werner, 4,279,412, Cl. 271-108.000.

Fergg, Berthold: *See—*
Stemme, Otto; Fergg, Berthold; Osegowitsch, Viktor; and Viehrig, Wolfgang, 4,279,491, Cl. 355-27.000.

Ferrari, Lorenzo, executor: *See—*
Bruzzese, Tiberio; and Ferrari, Rodolfo, deceased, 4,279,926, Cl. 424-316.000.

Ferrari, Mario C.: *See—*
Righi, Nardino; and Ferrari, Mario C., 4,279,170, Cl. 74-10.330.

Ferrari, Rodolfo, deceased: *See—*
Bruzzese, Tiberio; and Ferrari, Rodolfo, deceased, 4,279,926, Cl. 424-316.000.

Ferrier, Donald R.: *See—*
Kukanskis, Peter E.; Grunwald, John J.; Ferrier, Donald R.; and Sawoska, David A., 4,279,948, Cl. 427-305.000.

Ferzero, Maria Piera, Loriana Bossa, Ivo Bossa, legal representatives, heirs: *See—*
Bossa, Edoardo, deceased, 4,279,538, Cl. 405-66.000.

Feuerherm, Harald. Method for controlling wall thickness in extruded tubular synthetic-resin blank. 4,279,857, Cl. 264-541.000.

Fiat-Allis Construction Machinery, Inc.: *See—*
Joyce, Hardin, Jr., 4,279,319, Cl. 180-12.000.

Fiat Auto S.p.A.: *See—*
Lampredi, Aurelio; Leoni, Aldo; and Ioli, Luigi, 4,279,226, Cl. 123-90.550.

Figiel, Francis J.; and Colbert, Aaron, to Allied Chemical Corporation. Azeotrope-like compositions of trichlorotrifluoroethane, acetone and n-hexane. 4,279,664, Cl. 134-38.000.

Figiel, Francis J.: *See—*
Colbert, Aaron; and Figiel, Francis J., 4,279,665, Cl. 134-38.000.

Finch, Ray N.; and Nash, William D., to El Paso Products Company. Recovery of 1,3-butadiene by fractional crystallization from four-carbon mixtures. 4,279,130, Cl. 62-544.000.

Findeis, Gunter: *See—*
Thurm, Siegfried; Bunge, Konrad; and Findeis, Gunter, 4,279,502, Cl. 355-38.000.

Finestone, Arnold B.: *See—*
Allan, John L. H.; Finestone, Arnold B.; and Roderick, John J., 4,279,809, Cl. 260-45.95C.

Finike Italiana Marposs S.p.A.: *See—*
Gamberini, Giorgio; and Bozzoli, Giorgio, 4,279,079, Cl. 33-149.00J.

Finnigan, Oliver D., III. Juggling club. 4,279,416, Cl. 272-124.000.

Fischer, Michael A.; and Mears, James W., to Grinnell Fire Protection Systems Company, Inc. Sprinkler head with noncircular throat. 4,279,309, Cl. 169-37.000.

Fischer, William C.: *See—*
Adams, Don L.; Murphy, Richard D.; and Fischer, William C., 4,279,391, Cl. 244-17.130.

Fisher Corporation: *See—*
Bell, Robert L., 4,279,442, Cl. 297-367.000.

Fishgal, Semyon I. Hydraulic system. 4,279,751, Cl. 210-388.000.

Fitch, John K.: *See—*
Baker, Philip G.; Fitch, John K.; and Vance, Henry T., Jr., 4,279,487, Cl. 354-79.000.

Fitts, Uscoe J.: *See—*
Brown, Leon C.; Fitts, Uscoe J.; and Polakowski, David R., 4,279,504, Cl. 355-72.000.

Fitzgerald, Joseph C. Anti-clogging flume and structure for metering fluid flow. 4,279,148, Cl. 73-215.000.

Fitzpatrick, Peter R.; Meyerand, Russell G., Jr.; and Shotwell, Kenneth E., to United Technologies Corporation. Heat pipe bag system. 4,279,294, Cl. 165-45.000.

Flack, Earl, Jr. Seal for space between window openings of a vehicle cab and a camper carried thereby. 4,279,426, Cl. 277-237.00R.

Flaig, Ulrich; Piwonda, Fridolin; Stumpp, Gerhard; and Wessel, Wolf, to Robert Bosch GmbH. Apparatus for fixing the composition of the gas content of internal combustion engine cylinders. 4,279,235, Cl. 123-569.000.

Flameless Furnaces Limited: *See—*
Pearce, Arnold P., 4,279,222, Cl. 122-4.00D.

Fliege, Hans: *See—*
Brunken, Gerd; Eibl, Volker; and Fliege, Hans, 4,280,118, Cl. 340-147.0MD.

Flower, Robert A., to Singer Company, The. Receiver and correlator switching method. 4,280,222, Cl. 375-38.000.

FMC Corporation: *See—*
Brubaker, Gaylen R., 4,279,764, Cl. 252-99.000.
Col, Martin H.; and Peters, Ronald L., 4,279,118, Cl. 56-329.000.

Focke, Bernhard: *See—*
Focke, Heinz; and Focke, Bernhard, 4,279,955, Cl. 428-174.000.

Focke & Co.: *See—*
Focke, Heinz; and Focke, Bernhard, 4,279,955, Cl. 428-174.000.

Focke, Heinz; and Focke, Bernhard, to Focke & Co. Wedge shaped chute walls with bent ends for cigarette magazines. 4,279,955, Cl. 428-174.000.

Fohl, Timothy: *See—*
Dow, Judith A.; and Fohl, Timothy, 4,279,590, Cl. 431-360.000.

Fonas Corporation: *See—*
Hancovsky, John P., 4,279,169, Cl. 74-3.540.

Forberg, Horst, to Krone GmbH. Electrical crimp connector for making a connection between an insulated wire and connecting element. 4,279,460, Cl. 339-97.00P.

Forbo Betriebs AG: *See—*
Johnard, Bengt O., 4,279,954, Cl. 428-158.000.

Ford Aerospace & Communications Corporation: *See—*
Chethik, Frank, 4,280,224, Cl. 375-116.000.

Stanwood, Jay W.; Clarke, William A.; and MacLeane, Johannes, 4,279,275, Cl. 138-109.000.
Ford Motor Company: *See—*
Sisoler, Gabriel M.; Spade, Vincent L.; Sowman, James P.; Casterwiler, Larry J.; and Puma, Bernard, 4,279,634, Cl. 65-182.300.
Forman, Donald B., to United States of America, Navy. Separable fiber optic cable connector. 4,279,469, Cl. 350-96.220.
Forterre, Gerard; and Berthe, Jacques, to Thomson-CSF. Waveguide circulator having cooling means. 4,280,111, Cl. 333-1.100.
Foseco International Limited: *See—*
Derbyshire, Stewart, 4,279,946, Cl. 427-133.000.
Foster, Charles H., to Eastman Kodak Company. Process for separating 3-hydroxy steroids or sterols from mixtures such as lipids. 4,279,828, Cl. 260-397.250.
Foster, Stephen R.: *See—*
Akkerman, Neil H.: Foster, Stephen R.; and Goans, Kip B., 4,279,272, Cl. 137-596.180.
Foundation: The Research Institute for Special Inorganic Materials, The: *See—*
Yajima, Seishi; Okamura, Kiyohito; Shishido, Toetsu; and Hasegawa, Yoshio, 4,279,654, Cl. 106-39.600.
Four Star Corporation: *See—*
Kowalski, Daniel J., 4,279,368, Cl. 224-326.000.
Fox, Daniel W., to General Electric Company. Foamable polyester composition. 4,280,005, Cl. 521-90.000.
Francavilla, Thomas L.; and Wolf, Stuart A., to United States of America, Navy. Method of forming thin niobium carbonitride superconducting films of exceptional purity. 4,279,969, Cl. 428-698.000.
Francia, Carlo: *See—*
Merli, Claudio; and Francia, Carlo, 4,279,286, Cl. 152-353.00R.
Francis, William T., Jr., to Francis, William T., Jr. Flexible antifreeze heatconductor liquid transfer connector hose. 4,279,270, Cl. 137-340.000.
Franey, John P.; and Graedel, Thomas E., to Bell Telephone Laboratories, Incorporated. Composition useful for detecting H_2S. 4,279,773, Cl. 252-408.000.
Freeman, William L. Pocket can opener. 4,279,077, Cl. 30-442.000.
Fremont Industries, Inc.: *See—*
Busch, Bruce D., 4,279,768, Cl. 252-180.000.
Friar, Lawrence B.; and Smith, Kenneth M., to Du Pont de Nemours, E. I., and Company. Recovery of silver from photographic processor effluents. 4,279,644, Cl. 75-118.00P.
Friehler, William R., to Sherwood Medical Industries, Inc. Reagent separator for a blood collection tube. 4,279,863, Cl. 422-102.000.
Fritz Schafer GmbH: *See—*
Schafer, Gerhard, 4,279,215, Cl. 118-326.000.
Fritzvold, Bjorn H.; and Soteland, Nicolai, to Myrens Verksted A/S. Method for treating refined mechanical pulp and thermo mechanical pulp with ozone. 4,279,694, Cl. 162-28.000.
Froeschke, Reinhard, to Sandvik Conveyor GmbH. Extrusion apparatus. 4,279,579, Cl. 425-6.000.
Frosch, Robert A.: *See—*
McCann, David H; White, Marvin H.; Turly, Alfred P.; and Frosch, Robert A., 4,280,141, Cl. 358-213.000.
Fuchs, Rainer; Hoffmann, Hellmut; Hammann, Ingeborg; Homeyer, Bernhard; and Stendel, Wilhelm, to Bayer Aktiengesellschaft. 2,2-Dimethyl-3-(2-bromo-2-phenyl-vinyl)-cyclopropanecarboxylic acid 3-phenoxybenzyl esters and pesticidal use. 4,279,920, Cl. 424-282.000.
Fuchs, Rainer; Naumann, Klaus; Lantzsch, Reinhard; Hagemann, Hermann; Hammann, Ingeborg; Homeyer, Bernhard; Behrenz, Wolfgang; and Stendel, Wilhelm, to Bayer Aktiengesellschaft. Combating pests with 3-(2,3-dichloro-3,3-difluoro-prop-1-en-1-yl)-2,2-dimethyl-cyclo-propanecarboxylic acid fluoro-benzyl esters. 4,279,923, Cl. 424-304.000.
Fuji Chemicals Industrial Co., Ltd.: *See—*
Matsuda, Shunsuke; Tsuchiya, Soji; Honma, Masami; and Nagamatsu, Gentaro, 4,279,984, Cl. 430-270.000.
Fuji Photo Film Co., Ltd.: *See—*
Aoki, Kozo; Furutachi, Nobuo; and Sawada, Satoru, 4,279,990, Cl. 430-551.000.
Fukushima, Osamu; and Shiraishi, Atsushi, 4,279,495, Cl. 354-321.000.
Iwasaki, Masayuki; Nagashima, Akira; and Sato, Shigeru, 4,279,982, Cl. 430-170.000.
Fujii, Kenji: *See—*
Yokoyama, Tohei; Asakura, Shintaro; Urayama, Kiyoshi; and Fujii, Kenji, 4,279,165, Cl. 73-826.000.
Fujimori, Naoji; Tobioka, Masaaki; Asai, Tsuyoshi; Yamamoto, Takaharu; and Miyake, Masaya, to Sumitomo Electric Industries, Ltd. Sintered hard metal and the method for producing the same. 4,279,651, Cl. 75-233.000.
Fujioka, Hironari; and Matsubayashi, Hajime, to Kanzaki Paper Manufacturing Co., Ltd. Electrostatic record material. 4,279,961, Cl. 428-328.000.
Fujisawa Pharmaceutical Co., Ltd.: *See—*
Takashima, Toshiyuki, 4,279,909, Cl. 424-250.000.
Takaya, Takao; Masugi, Takashi; Takasugi, Hisashi; and Kochi, Hiromu, 4,279,818, Cl. 424-246.000.
Fujitsu Limited: *See—*
Takahashi, Masayuki; and Monma, Hideo, 4,280,213, Cl. 368-187.000.
Fujiwara, Koichi; Yamauchi, Coro; Arita, Kishio; and Tsurumi, Shigeyuki, to Nippon Telegraph and Telephone Public Corporation. Electrical contact material. 4,279,649, Cl. 75-173.00A.
Fujiyoshi, Kenji: *See—*
Hiraoka, Takayuki; and Fujiyoshi, Kenji, 4,279,957, Cl. 428-212.000.
Fukada, Tomihiro; and Kamei, Mitsuru, to Doryokuro Kakunenryo Kaihatsu Jigyodan. Pressure measuring apparatus with temperature compensating means. 4,279,160, Cl. 73-708.000.
Fukahori, Hidehiko: *See—*
Mashimo, Yukio; Iwashita, Tomonori; and Fukahori, Hidehiko, 4,279,490, Cl. 354-173.000.
Fukatsu, Kunio, to Tokyo Shibaura Denki Kabushiki Kaisha. Banking apparatus using passbooks. 4,280,036, Cl. 235-379.000.
Fukazawa, Tokuumi: *See—*
Takagi, Kazumasa; Fukazawa, Tokuumi; and Oi, Tetsu, 4,279,772, Cl. 252-301.40F.
Fukui, Yoshiharu: *See—*
Shiga, Akinobu; Fukui, Yoshiharu; Hanji, Katsumi; Sasaki, Toshio; Okawa, Masahisa; Matsuura, Hideaki; and Yamada, Yasuharu, 4,279,776, Cl. 252-429.00B.
Fukuoka, Yohei: *See—*
Nishikido, Joji; Fukuoka, Yohei; and Tamura, Nobuhiro, 4,279,836, Cl. 260-500.50H.
Fukushima, Osamu; and Shiraishi, Atsushi, to Fuji Photo Film Co., Ltd. Photosensitive material processing apparatus. 4,279,495, Cl. 354-321.000.
Fukuto, Tetsuo R.: *See—*
Fahmy, Mohamed A. H.; and Fukuto, Tetsuo R., 4,279,897, Cl. 424-211.000.
Furuhashi, Toshio: *See—*
Takato, Masao; Imai, Masumi; and Furuhashi, Toshio, 4,280,189, Cl. 364-734.000.
Furukawa, Kenji: *See—*
Inukai, Takashi; Inoue, Hiromichi; Furukawa, Kenji; Sato, Hideo; and Sugimori, Shigeru, 4,279,770, Cl. 252-299.620.
Furusawa, Yoshikatsu. Direction indication apparatus for vehicles. 4,280,117, Cl. 340-81.00R.
Furutachi, Nobuo: *See—*
Aoki, Kozo; Furutachi, Nobuo; and Sawada, Satoru, 4,279,990, Cl. 430-551.000.
FXC Corporation: *See—*
Saxton, Dennis M., 4,279,392, Cl. 244-150.000.
Fylling, Tor T. Torque applicator. 4,279,171, Cl. 74-128.000.
Gabbay, Shlomo. Sternum closure device and procedure for using same. 4,279,248, Cl. 128-92.0EA.
Gagliardi, Joseph; and Lee, Charles A., to Mercantile Development, Inc. Material and system for minimizing erosion. 4,279,535, Cl. 405-15.000.
Galante, Jorge O.: *See—*
Andriacchi, Thomas P.; Galante, Jorge O.; and Hampton, Steven J., 4,279,042, Cl. 3-1.913.
Gallaher, Thomas L.: *See—*
Harvey, Richard D.; Gallaher, Thomas L.; Mullikin, Raymond L.; and Small, Thomas L., 4,279,658, Cl. 106-213.000.
Gallart, Robert. Power tool. 4,279,141, Cl. 72-482.000.
Gallup, Janet: *See—*
Kozak, Peter P., Jr.; and Gallup, Janet M., 4,280,000, Cl. 435-242.000.
Gallup, Janet M.: *See—*
Kozak, Peter P., Jr.; and Gallup, Janet M., 4,280,000, Cl. 435-242.000.
Galmiche, Rene G.: *See—*
Pottorff, Donald R.; and Galmiche, Rene G., 4,279,330, Cl. 188-71.700.
Gamberini, Giorgio; and Bozzoli, Giorgio, to Finike Italiana Marposs S.p.A. Direct feeling gage for the measurement of the sizes of moving workpieces, in particular for measurements with intermittent contact between the feeling means and the workpiece. 4,279,079, Cl. 33-149.00J.
Gana, John; and Torlay, Dwight L., to United States Steel Corporation. Mill roll balance system. 4,279,140, Cl. 72-237.000.
Ganguly, Ashit K.; and Liu, Yi-Tsung, to Schering Corporation. Novel 20-imino macrolide antibacterial agents. 4,279,896, Cl. 424-180.000.
Gantzert, Thomas R.: *See—*
Lindberg, Allen W.; Gantzert, Thomas R.; and Hicks, Donald L., 4,279,231, Cl. 123-489.000.
Gardner, Jeffrey M., to Container Corporation of America. Shipping-display container. 4,279,375, Cl. 229-37.00R.
Garofalo, Giovanni, to AMF Incorporated. Diving mask. 4,279,040, Cl. 2-428.000.
Garrett Corporation, The: *See—*
Egli, Hans; Byrne, Joe L.; and Nancarrow, James H., 4,279,570, Cl. 415-53.00T.
Garvie, Ronald C.; Hannink, Richard H. J.; and McKinnon, Neil A. Partially stabilized zirconia ceramics. 4,279,655, Cl. 106-57.000.
Gebr. Hofmann GmbH, KG Machinenfabrik: *See—*
Gehron, Peter, 4,279,329, Cl. 187-25.000.
Gebruder Junghans GmbH: *See—*
Maurer, Roland, 4,279,072, Cl. 29-764.000.
Gehrmann, Klaus: *See—*
Erpenbach, Heinz; Gehrmann, Klaus; Kubbeler, Hans-Klaus; and Lork, Winfried, 4,280,010, Cl. 560-205.000.
Gehron, Peter, to Gebr. Hofmann GmbH, KG Machinenfabrik. Safety device for lift equipment. 4,279,329, Cl. 187-25.000.
Geike, Bernd: *See—*
Bruckner, Georg F.; Geike, Bernd; Schoen, Bernd-Jurgen; and Berger, Fritz, 4,279,038, Cl. 2-425.000.
Gellert, Jobst U. Hot tip seal. 4,279,588, Cl. 425-568.000.

General Battery Corporation: *See—*
Hawrylo, Stanley F., 4,279,584, Cl. 425-307.000.

General Electric Company: *See—*
Anthony, Thomas R.; and Cline, Harvey E., 4,279,667, Cl. 148-32.000.
Arendt, Ronald H., 4,279,971, Cl. 429-46.000.
Baldwin, Samuel L., 4,280,170, Cl. 362-224.000.
Bradley, Irving; and Vodicka, Vincent, 4,280,173, Cl. 362-294.000.
Cutler, John H.; and Walker, Loren H., 4,280,085, Cl. 318-803.000.
Dinger, Edward H.; and Ritter, Allen M., 4,280,081, Cl. 318-6.000.
Eckberg, Richard P.; and LaRochelle, Ronald W., 4,279,717, Cl. 204-159.130.
Engeler, William E.; and Tiemann, Jerome J., 4,280,066, Cl. 307-221.00D.
Farrington, Gregory C., 4,280,115, Cl. 338-35.000.
Fox, Daniel W., 4,280,005, Cl. 521-90.000.
Greskovich, Charles D.; Prochazka, Svante; and Palm, John A., 4,279,656, Cl. 106-73.500.
Greskovich, Charles D., 4,279,657, Cl. 106-73.500.
Houston, John M., 4,280,093, Cl. 324-117.00R.
Kramer, Morton; and Wambach, Allen D., 4,279,801, Cl. 260-40.00R.
Kure-Jensen, Jens; Gordon, Richard S.; Devlin, Charles L.; and Krings, Frederick C., 4,280,060, Cl. 290-40.00R.
Laskaris, Evangelos T., 4,279,944, Cl. 427-62.000.
Leiter, Gordon A.; and Schall, Herman H., 4,280,030, Cl. 200-237.000.
Nassi, Menahem; and Stonestrom, James P., 4,280,178, Cl. 364-414.000.
Powers, Robert W.; and Bielawski, John C., 4,279,725, Cl. 204-181.00F.
Ward, William J., III, 4,279,855, Cl. 264-298.000.
Wyler, John S.; and Pfuntner, Richard A., 4,279,168, Cl. 73-861.350.

General Motors Corporation: *See—*
Chapman, Lloyd R.; and Watton, John F., 4,279,782, Cl. 252-465.000.
Matter, Robert C., 4,279,977, Cl. 429-245.000.
Micheli, Adolph L., 4,279,666, Cl. 148-6.300.
Stettner, Ernest R., 4,279,841, Cl. 261-23.00A.

General Signal Corporation: *See—*
Right, Robert W.; McCord, Herbert W.; and Podany, Vaclav O., 4,280,123, Cl. 340-384.00E.
Trafford, Larry F.; and Thompson, John W. K., 4,280,120, Cl. 340-303.000.

General Tire & Rubber Company, The: *See—*
Aggarwal, Sundar L.; Hargis, Ivan G.; and Livigni, Russell A., 4,279,798, Cl. 260-33.40R.
Barden, Bruce L.; and Coder, William D., Jr., 4,279,953, Cl. 428-90.000.

Generator Industri AB: *See—*
Rosenblad, Gosta, 4,279,126, Cl. 60-651.000.

Georgalas, Arthur: *See—*
Harris, Thomas C.; and Georgalas, Arthur, 4,279,890, Cl. 424-69.000.

Gerest, Pierre: *See—*
Boeuf, Jean-Marie; Gerest, Pierre; and Lemaire, Henri, 4,279,763, Cl. 252-62.580.

Gerhards, Gerd: *See—*
Arnold, Herbert; and Gerhards, Gerd, 4,279,229, Cl. 123-359.000.

Gerhards, Hans J.: *See—*
Lassmann, Eberhard; Kohler, Peter; Beran, Franz; and Gerhards, Hans J., 4,279,872, Cl. 423-228.000.

Gerharz, Reinhold, to United States of America, Army. Microwave image converter. 4,280,055, Cl. 250-484.000.

Gertz, Donald: *See—*
Weinstein, Warren D.; Boudreau, Jean A.; and Gertz, Donald, 4,280,188, Cl. 364-566.000.

Gewerkschaft Eisenhutte Westfalia: *See—*
Hauschopp, Alois, 4,279,445, Cl. 299-34.000.

GG. Noell GmbH: *See—*
Kuhn, Rolf, 4,279,699, Cl. 176-30.000.

Giet, Claude, to Produits Chimiques Ugine Kuhlmann. Acetylene black with high electrical conductivity and high absorptive power. 4,279,880, Cl. 423-445.000.

Giflo, Henrik. Construction steel exhibiting high fatigue strength. 4,279,647, Cl. 75-124.000.

Gilkison, John J., to Rolls-Royce Limited. Method of arc welding porous sheet metal. 4,280,040, Cl. 219-104.000.

Gilmour, George A., to Westinghouse Electric Corp. Sonar beam forming utilizing the chirp Z-transform. 4,280,203, Cl. 367-103.000.

Giros, Marcel A. P. Apparatus for limiting the size of turns of a helically formed long product. 4,279,372, Cl. 226-118.000.

Gladush, Vasily M.; Eremenko, Nena G.; Markina, Ljudmila V.; Kochuev, Evgeny S.; Krainik, Mikhail P.; Cherkasova, Evgenia E.; and Lyashenko, Nikolai M. Enamel slip. 4,279,963, Cl. 428-433.000.

Glaenzer Spicer: *See—*
Mangiavacchi, Jacques; Chauvelot, Alain; and Dolain, Claude, 4,279,528, Cl. 403-57.000.

Glardon, Remi: *See—*
Kurz, Wilfried; and Glardon, Remi, 4,279,668, Cl. 148-101.000.

Glatz, Werner, to Ferag AG. Apparatus for engaging and moving individual flat structures, especially paper sheets or printed products. 4,279,412, Cl. 271-108.000.

Glaxo Group Limited: *See—*
Martin-Smith, Michael; Price, Barry J.; Bradshaw, John; and Clitherow, John W., 4,279,911, Cl. 424-251.000.

Gleason, Charles H.; and Greenleaf, James O. Roofing panel. 4,279,106, Cl. 52-100.000.

Gleim, William K. T. Method of hydrorefining asphaltenic hydrocarbon feedstocks. 4,279,736, Cl. 208-215.000.

Glenn, Eldridge M.: *See—*
Hall, Charles M.; and Glenn, Eldridge M., 4,279,930, Cl. 424-331.000.

Globe Tool & Engineering Company, The: *See—*
Peck, Kenneth E., Jr.; and Pearsall, Harold I., 4,279,277, Cl. 140-92.200.

Goans, Kip B.: *See—*
Akkerman, Neil H.; Foster, Stephen R.; and Goans, Kip B., 4,279,272, Cl. 137-596.180.

Gokan, Hiroshi: *See—*
Ohnishi, Yoshitake; Itoh, Masaki; Mizuno, Kenji; and Gokan, Hiroshi, 4,279,986, Cl. 430-280.000.

Golata, John H.: *See—*
Daudi, Anwar; Golata, John H.; and Triponi, Doarde G., 4,279,287, Cl. 152-375.000.

Goldbarg, Herman. Refuse collecting tool. 4,279,437, Cl. 294-1.0BB.

Golding, Russell J., Sr. Motor vehicle camper. 4,279,440, Cl. 296-164.000.

Goldman, Jon C.; McMillan, Larry D.; and Price, James B., to Motorola, Inc. Deposition of silicon nitride. 4,279,947, Cl. 427-255.200.

Goller, Glen J.: *See—*
Breault, Richard D.; Goller, Glen J.; Roethlein, Richard J.; and Sprecher, Gilbert C., 4,279,970, Cl. 429-35.000.

Goodyear Aerospace Corporation: *See—*
Crossman, Richard L.; and Kirk, Richard L., 4,279,333, Cl. 188-218.0XL.

Goodyear Tire & Rubber Company, The: *See—*
Hitzky, Leon J., 4,279,283, Cl. 152-209.00R.
MacGregor, Cline J.; and Parker, Roy A., 4,279,799, Cl. 260-37.00N.
Martin, Billy P.; and Vanis, Vernon V., 4,279,449, Cl. 305-35.0EB.
Spadone, Leighton R., 4,279,284, Cl. 152-330.00R.

Gordon, Bruce E.: *See—*
Lowenschuss, Oscar; and Gordon, Bruce E., 4,280,219, Cl. 375-4.000.

Gordon, Richard S.: *See—*
Kure-Jensen, Jens; Gordon, Richard S.; Devlin, Charles L.; and Krings, Frederick C., 4,280,060, Cl. 290-40.00R.

Gordy, Robert S.; Poston, Billy R.; and Sanders, David E., to E-Systems, Inc. False alarm processor. 4,280,218, Cl. 371-6.000.

Gotlinksy, Barry: *See—*
Engel, Robert R.; Sarin, Virender K.; Gotlinksy, Barry; Tropp, Burton E.; and Parker, Thomas S., 4,279,898, Cl. 424-217.000.

Goto, Kazuo: *See—*
Shono, Tetsuji; Goto, Kazuo; and Ohishi, Michiro, 4,279,489, Cl. 354-155.000.

Gotou, Makoto; Kobayashi, Kazutsugu; and Okumura, Kenichiro, to Matsushita Electric Industrial Co., Ltd. Rotating electric machine. 4,280,072, Cl. 310-67.00R.

Gotter, Eugen, to Hoffman-Werke GmbH. Shell container comprising a centering assembly. 4,279,339, Cl. 206-3.000.

Gozzo, Franco; Abbruzzese, Luigi; and Longoni, Angelo, to Montedison S.p.A. Ureas having insecticide and nematocide action. 4,279,927, Cl. 424-322.000.

Gradl, Reinhard: *See—*
Schrodter, Klaus; Gradl, Reinhard; Ehlers, Klaus-Peter; and Scheibitz, Wolfgang, 4,279,876, Cl. 423-305.000.

Graedel, Thomas E.: *See—*
Franey, John P.; and Graedel, Thomas E., 4,279,773, Cl. 252-408.000.

Grain Processing Corporation: *See—*
Harvey, Richard D.; Gallaher, Thomas L.; Mullikin, Raymond L.; and Small, Thomas L., 4,279,658, Cl. 106-213.000.

Grammont, Paul D. A.: *See—*
Herbin, Jean E. E.; and Grammont, Paul D. A., 4,280,003, Cl. 521-31.000.

Grant, Herman L., to Herman Grant Co., Inc. Heat exchanger for pre-heating intake air for rotary dryer. 4,279,592, Cl. 432-105.000.

Grawey, Charles E., to Caterpillar Tractor Co. Apparatus and method for forming a tube article on a core. 4,279,285, Cl. 152-330.00R.

Gray, Charles E., deceased; and by Gray, Emma Dee, executrix. Surface casing stabilizer and hanger and method of employing the same. 4,279,308, Cl. 166-315.000.

Gray, Emma Dee, executrix: *See—*
Gray, Charles E., deceased; and Gray, Emma Dee, executrix, 4,279,308, Cl. 166-315.000.

Gray, Marie S.; and Cherry, John P., to United States of America, Agriculture. Treatment of cottonseed meals followed by extraction with certain solvents to remove gossypol. 4,279,811, Cl. 260-123.500.

Great Lakes Carbon Corporation: *See—*
Winters, Richard D., 4,279,612, Cl. 8-115.500.

Greenberg, Lawrence A., to Bethlehem Steel Corporation. Hot top for ingot mold. 4,279,400, Cl. 249-106.000.

Greening Donald Co. Ltd.: *See—*
McKenzie, Kenneth G., 4,279,531, Cl. 403-267.000.

Greenleaf, James O.: *See—*
Gleason, Charles H.; and Greenleaf, James O., 4,279,106, Cl. 52-100.000.

Greskovich, Charles D.; Prochazka, Svante; and Palm, John A., to General Electric Company. Light-transmitting silicon nitride. 4,279,656, Cl. 106-73.500.

Greskovich, Charles D., to General Electric Company. Light-transmitting silicon nitride. 4,279,657, Cl. 106-73.500.

Gretag Aktiengesellschaft: *See*—
Ursprung, Karl; and Zimmermann, Franz, 4,279,505, Cl. 355-77.000.

Griffin, James G.; and Schwarz, Frederick M., to United Technologies Corporation. External gas turbine engine cooling for clearance control. 4,279,123, Cl. 60-226.00R.

Grimes, Patrick G.: *See*—
Bellows, Richard J.; and Grimes, Patrick G., 4,279,732, Cl. 204-269.000.

Grimm, Phillip R., to American Hospital Supply Corporation. Chuck assembly for dental handpieces. 4,279,597, Cl. 433-129.000.

Grinnell Fire Protection Systems Company, Inc.: *See*—
Fischer, Michael A.; and Mears, James W., 4,279,309, Cl. 169-37.000.

Grover, Charles R., Jr.: *See*—
Anderson, Nathaniel C.; and Grover, Charles R., Jr., 4,279,707, Cl. 204-43.00T.

Grumman Aerospace Corporation: *See*—
Weinstein, Warren D.; Boudreau, Jean A.; and Gertz, Donald, 4,280,188, Cl. 364-566.000.

Grunbacher, Martin, to Ernst Kaull & Co. GmbH. Electromagnetic drive system for photographic shutters. 4,279,485, Cl. 354-51.000.

Grunwald, John J.: *See*—
Kukanskis, Peter E.; Grunwald, John J.; Ferrier, Donald R.; and Sawoska, David A., 4,279,948, Cl. 427-305.000.

Gruppo Lepetit S.p.A.: *See*—
Pagani, Hermes; Parenti, Francesco; Coronelli, Carolina; and Tamoni, Giorgion, 4,280,001, Cl. 435-253.000.

Gryn, Felix J.; and Young, James E., to Emerson Electric Co. Field replaceable electrode assembly for magnetic flowmeter. 4,279,166, Cl. 73-861.120.

GTE Laboratories Incorporated: *See*—
Baird, Donald H.; and McDonough, Martin S., 4,279,726, Cl. 204-192.00P.
Natansohn, Samuel; and Su, Sophia R., 4,279,870, Cl. 423-54.000.

GTE Products Corporation: *See*—
Dow, Judith A.; and Fohl, Timothy, 4,279,590, Cl. 431-360.000.
Dziedzic, Chester J.; Cleveland, Joseph J.; and Newman, Ray L., 4,279,297, Cl. 165-165.000.

Guarino, Nicholas, to Varian Associates, Inc. X-Y Work table. 4,280,054, Cl. 250-440.000.

Guhrmann, Klaus: *See*—
Erpenbach, Heinz; Guhrmann, Klaus; and Joest, Herbert, 4,280,009, Cl. 560-205.000.

Guidry, Debra K. Pull toy. 4,279,096, Cl. 46-11.000.

Guillaume, Paul; Karinthi, Pierre; and Nicolas, Jacques, to L'Air Liquide, Societe Anonyme Pour l'Etude et l'Exploitation des Procedes Georges Claude. Method and apparatus for heat treatment of industrial wastes. 4,279,208, Cl. 110-346.000.

Guillen, Francisco J.: *See*—
Lee, Henry E.; Guillen, Francisco J.; and Longuemare, R. Noel, Jr., 4,280,127, Cl. 343-5.0CM.

Guipaud, Serge C., to Societe Pour l'Equipement de Vehicules. Electronic pinking detector. 4,279,143, Cl. 73-35.000.

Gulf Oil Corporation: *See*—
Hoffmann, Otto L.; and Kirkpatrick, Joel L., 4,279,636, Cl. 71-90.000.

Gulfeber, A.B.: *See*—
Assarsson, Alf G.; and Korpela, Heikki, 4,279,847, Cl. 264-51.000.

Gunji, Yoshihisa: *See*—
Okano, Hiroshi; and Gunji, Yoshihisa, 4,279,576, Cl. 417-407.000.

Guralp, Cansun M., to National Research Development Corporation. Seismometers. 4,280,206, Cl. 367-179.000.

Gutcho, Sidney; and Mansbach, Lillian, to Becton Dickinson & Company. Simultaneous radioassay of folate and vitamin B_{12}. 4,279,859, Cl. 422-61.000.

Gutierreza Atencio, Francisco J. Dam with transformable hydroenergetic arrangement. 4,279,539, Cl. 405-76.000.

Gutman, Arnold D., to Stauffer Chemical Company. 3,5-Disubstituted 1,2,4-oxadiazole herbicidal antidotes. 4,279,638, Cl. 71-92.000.

Gutner, Kenneth H. Canopy support for beds and method. 4,279,264, Cl. 135-5.100.

Gutsche, Klaus; Scharwaechter, Peter; Kohlmann, Wilhelm; and Kroemer, Gerd, to BASF Aktiengesellschaft. Benzylpyrimidines, processes for their manufacture, and drugs containing the said compounds. 4,279,899, Cl. 424-229.000.

Gwyn, John E., to Shell Oil Company. Coking prevention. 4,279,733, Cl. 208-48.00R.

Gwyn, John E., to Shell Oil Company. Quench Process. 4,279,734, Cl. 208-48.00Q.

H. R. Electronics Company: *See*—
Levasseur, Joseph L., 4,280,181, Cl. 364-464.000.

Haag, Werner O.; and Huang, Tracy J., to Mobil Oil Corporation. Conversion of synthesis gas to hydrocarbon mixtures utilizing dual reactors. 4,279,830, Cl. 518-700.000.

Haas, Robert V., to Singer Company, The. Combined chest of drawers and sewing machine table. 4,279,453, Cl. 312-282.000.

Haase, Gerald A. Magnet attachment for vacuum cleaners. 4,279,745, Cl. 209-215.000.

Haberle, Friedrich: *See*—
Kress, Dieter; and Haberle, Friedrich, 4,279,550, Cl. 408-59.000.

Hacker, Dennis J., to High Efficiency Insulation Technologies, Inc. Retaining clip for soffit fixing on steel beams or columns. 4,279,111, Cl. 52-714.000.

Haes, Freddy; Hermes, Guillaume M. P. G.; and Reijnhout, Cornelis M., to U.S. Philips Corporation. Epilation apparatus. 4,279,253, Cl. 128-355.000.

Hafa Fabriks AB: *See*—
Larsson, Frank, 4,279,397, Cl. 248-221.300.

Hafer, Edward H.; and Klinger, William J., to Bell Telephone Laboratories, Incorporated. Time division switching system control arrangement. 4,280,217, Cl. 370-63.000.

Hagemann, Hermann: *See*—
Fuchs, Rainer; Naumann, Klaus; Lantzsch, Reinhard; Hagemann, Hermann; Hammann, Ingeborg; Homeyer, Bernhard; Behrenz, Wolfgang; and Stendel, Wilhelm, 4,279,923, Cl. 424-304.000.

Hagen, Alexander; Edelmann, Hermann; and Klose, Sigmar, to Boehringer Mannheim GmbH. Process and apparatus for preparing multicomponent reagent solutions. 4,279,991, Cl. 435-4.000.

Hajek, Manfred: *See*—
Wellner, Wolfgang; and Hajek, Manfred, 4,279,793, Cl. 260-18.00R.

Hall, Charles M.; and Glenn, Eldridge M., to Upjohn Company, The. Process for treating inflammation. 4,279,930, Cl. 424-331.000.

Halle, Reidar; Peterson, David; and Lewis, Roger N., to Argus Chemical Corporation. 2-Chloro-2-alkyl substituted asymmetrical diacyl peroxides. 4,279,831, Cl. 260-453.0RZ.

Halliburton Company: *See*—
Knox, Lloyd C.; and Nickles, Robert B., Jr., 4,279,266, Cl. 137-68.00R.

Halm, Immanuel. Coin guard for coin protection. 4,279,113, Cl. 53-219.000.

Hamagami, Teruaki; Maetani, Kazuo; and Sato, Fumio, to Sumitomo Metal Mining Company Limited. Apparatus for securing tape to leads of semiconductor lead frame. 4,279,682, Cl. 156-367.000.

Hamano, Shin: *See*—
Hirai, Hiromu; and Hamano, Shin, 4,280,083, Cl. 318-565.000.

Hamel, Robert E., Jr.: *See*—
McKinley, Ronald R.; Hamel, Robert E., Jr.; and Dolan, Bernard J., 4,280,122, Cl. 340-380.000.

Hamilton, Richard A., Jr.: *See*—
Comparetto, John E.; and Hamilton, Richard A., Jr., 4,279,046, Cl. 5-503.000.

Hammann, Ingeborg: *See*—
Fuchs, Rainer; Hoffmann, Hellmut; Hammann, Ingeborg; Homeyer, Bernhard; and Stendel, Wilhelm, 4,279,920, Cl. 424-282.000.
Fuchs, Rainer; Naumann, Klaus; Lantzsch, Reinhard; Hagemann, Hermann; Hammann, Ingeborg; Homeyer, Bernhard; Behrenz, Wolfgang; and Stendel, Wilhelm, 4,279,923, Cl. 424-304.000.

Hamprecht, Rainer: *See*—
Schallner, Otto; and Hamprecht, Rainer, 4,279,813, Cl. 260-163.000.

Hampton, Steven J.: *See*—
Andriacchi, Thomas P.; Galante, Jorge O.; and Hampton, Steven J., 4,279,042, Cl. 3-1.913.

Hancou, Theodore, to Societe d'Exploitation de Brevets J.B. Screen-wiper blade with replaceable blade rubber. 4,279,054, Cl. 15-250.420.

Hancovsky, John P., to Fonas Corporation. Timer latch mechanisms. 4,279,169, Cl. 74-3.540.

Handtmann, Dieter: *See*—
Wessel, Wolf; and Handtmann, Dieter, 4,279,146, Cl. 73-118.000.

Hanji, Katsumi: *See*—
Shiga, Akinobu; Fukui, Yoshiharu; Hanji, Katsumi; Sasaki, Toshio; Okawa, Masahisa; Matsuura, Hideaki; and Yamada, Yasuharu, 4,279,776, Cl. 252-429.00B.

Hanna, Wayne E.: *See*—
Jackman, Joseph R.; and Hanna, Wayne E., 4,279,650, Cl. 75-175.500.

Hannink, Richard H. J.: *See*—
Garvie, Ronald C.; Hannink, Richard H. J.; and McKinnon, Neil A., 4,279,655, Cl. 106-57.000.

Hanrot, Jean-Pascal; and Volpeliere, Jacky, to Aluminum Pechiney. Method and apparatus of self-regulation for a pneumatic conveyor. 4,279,549, Cl. 406-14.000.

Hansen, Ove E.: *See*—
Felsvang, Karsten S.; Hansen, Ove E.; and Rasmussen, Elisabeth L., 4,279,873, Cl. 423-242.000.

Hara, Yoshiaki: *See*—
Ohta, Ryozo; Yoshizawa, Tadao; Sakaguchi, Masayuki; Hara, Yoshiaki; Kyomen, Junsuke; Yoneda, Ryuichi; and Enomoto, Hidekazu, 4,279,853, Cl. 264-230.000.

Harco Corporation: *See*—
Bushman, James B.; Dimond, James R.; and Hennessy, John, 4,279,729, Cl. 204-196.000.

Harcourt, Colin H.; and Barker, D. Roy, to Hoverlift Systems Ltd. Flexible paddle wheel structure. 4,279,603, Cl. 440-90.000.

Hargis, Ivan G.: *See*—
Aggarwal, Sundar L.; Hargis, Ivan G.; and Livigni, Russell A., 4,279,798, Cl. 260-33.40R.

Harloff, Gary J. Cross-flow turbine machine. 4,279,569, Cl. 415-52.000.

Harper, James C. Wire line tool release method. 4,279,304, Cl. 166-301.000.

Harper, Robert W.; and Kleiber, Robert A., to Caterpillar Tractor Co. Adjustable double link mounting. 4,279,348, Cl. 212-196.000.

Harris, Robert L.: *See*—
Hawke, Merrill P.; Elizalde, Pete, Jr.; and Harris, Robert L., 4,279,164, Cl. 73-826.000.

Harris, Thomas C.; and Georgalas, Arthur, to Chattem, Inc. Cosmetic facial powder containing walnut shell flour. 4,279,890, Cl. 424-69.000.

Harry S. Peterson Co., Inc.: *See—*
Peterson, Charles M.; and Lymburner, Frank M., 4,279,533, Cl. 404-68.000.

Harsigny, Christian: *See—*
Bettiol, Bruno; Harsigny, Christian; and Lenne, William, 4,279,480, Cl. 351-159.000.

Harvey, Kenneth: *See—*
Baines, Eric; and Harvey, Kenneth, 4,279,889, Cl. 424-57.000.

Harvey, Richard D.; Gallaher, Thomas L.; Mullikin, Raymond L.; and Small, Thomas L., to Grain Processing Corporation. Chemical-mechanical starch conversion. 4,279,658, Cl. 106-213.000.

Hasegawa, Yoshio: *See—*
Yajima, Seishi; Okamura, Kiyohito; Shishido, Toetsu; and Hasegawa, Yoshio, 4,279,654, Cl. 106-39.600.

Hashimoto, Mitsuru: *See—*
Ohta, Masafumi; Sakai, Kiyoshi; Hashimoto, Mitsuru; Kozima, Akio; and Sasaki, Masaomi, 4,279,981, Cl. 430-73.000.

Hatano, Tatsuro: *See—*
Takahama, Akio; and Hatano, Tatsuro, 4,280,057, Cl. 250-551.000.

Hatano, Yoshio: *See—*
Nonogaki, Saburo; and Hatano, Yoshio, 4,279,985, Cl. 430-280.000.

Hauck, Frederic P.; and Jacobs, Glenn A., to E. R. Squibb & Sons, Inc. Anti-arrhythmia agents. 4,279,902, Cl. 424-246.000.

Hauni-Werke Korber & Co. KG: *See—*
Reuland, Joachim; and Dahlgrun, Rolf, 4,280,187, Cl. 364-552.000.
von Wichert, Nils; and Schwenke, Dieter, 4,279,609, Cl. 493-276.000.

Hausberg, Hans-Heinrich: *See—*
Schoellkopf, Ulrich; Hausberg, Hans-Heinrich; Boell, Walter; May, Hans-Joachim; and Koenig, Horst, 4,280,008, Cl. 548-301.000.

Hausberger, Arthur L.: *See—*
Dienes, Edward K.; Coleman, Ray L.; and Hausberger, Arthur L., 4,279,781, Cl. 252-463.000.

Hauschopp, Alois, to Gewerkschaft Eisenhutte Westfalia. Longwall mining installation having stable-hole plough. 4,279,445, Cl. 299-34.000.

Hauser, Erhard, to Wilhelm Hedrich Vakuumanlagen GmbH & Co. K.G. System for feeding two synthetic-resin components to a mold. 4,279,360, Cl. 222-1.000.

Havas, George; and Esenwein, Fred D., to Ajax Magnethermic Corporation. Method and apparatus for inducting heating and melting furnaces to obtain constant power. 4,280,038, Cl. 219-10.770.

Hawke, Merrill P.; Elizalde, Pete, Jr.; and Harris, Robert L., to United States of America, Air Force. Metallurgical specimen tester. 4,279,164, Cl. 73-826.000.

Hawrylo, Stanley F., to General Battery Corporation. Automatic flash removing apparatus and method. 4,279,584, Cl. 425-307.000.

Hayakawa, Masao; Maeda, Takamichi; and Kumura, Masao, to Sharp Kabushiki Kaisha. Multi-lead frame member with means for limiting mold spread. 4,280,132, Cl. 357-70.000.

Hayakumo, Sunao: *See—*
Ebata, Sakae; Watari, Masahide; Hayakumo, Sunao; and Oyamada, Osamu, 4,279,701, Cl. 176-87.000.

Hayashi, Kohtaro; Morihara, Ko; and Nakamura, Kohji, to Chisso Corporation. Apparatus for making biaxially stretched tubular films. 4,279,580, Cl. 425-72.00R.

Hayashi, Mamoru: *See—*
Koiso, Kazuhiro; Sanda, Masaaki; Hayashi, Mamoru; and Uesugi, Hiroaki, 4,279,454, Cl. 312-297.000.

Hayashi, Shizuo: *See—*
Horin, Shoji; Hayashi, Shizuo; and Okumura, Takeo, 4,279,262, Cl. 132-7.000.

Hayashi, Sigeaki: *See—*
Ezaki, Akira; Kobayashi, Yoshiaki; and Hayashi, Sigeaki, 4,280,034, Cl. 235-1.00D.

Haynes, George R., to Shell Oil Company. N-Phenethylaminopropiophenones as lipogenesis inhibitors. 4,279,925, Cl. 424-311.000.

Haynes, George R., to Shell Oil Company. N-Phenethylaminopropiophenones as lipogenesis inhibitors. 4,279,929, Cl. 424-324.000.

Hayssen Manufacturing Company: *See—*
James, Robert C.; Horsman, Dennis P.; and Sorenson, Richard D., 4,279,116, Cl. 53-466.000.

Hch. Bertrams Aktiengesellschaft: *See—*
Kuhnlein, Hans; and Jarosch, Walter J., 4,279,693, Cl. 159-47.0WL.

Hearn, Milton T. W.; and Prestidge, Ross L. Preparative electrofocusing in flat bed granulated polysaccharide gels. 4,279,724, Cl. 204-180.00G.

Heath, Henry S., Jr.: *See—*
Borsuk, Leslie M.; Ciardiello, Catherine R.; and Heath, Henry S., Jr., 4,279,467, Cl. 350-96.210.

Heath, John S., to International Business Machines Corporation. Print mechanism for wire printer. 4,279,520, Cl. 400-124.000.

Hechtman, Steven A.: *See—*
Tepoorten, Darrell M.; and Hechtman, Steven A., 4,279,421, Cl. 273-237.000.

Hedrich, Ross R.: *See—*
Horst, Ronald A.; and Hedrich, Ross R., 4,279,716, Cl. 204-149.000.

Heffel, Harold. Door lock guard protector. 4,279,436, Cl. 292-346.000.

Heid, Hans: *See—*
Maute, Alfred; Teitz, Konrad; Baier, Klaus; and Heid, Hans, 4,279,511, Cl. 356-328.000.

Heineman, Ralph A.: *See—*
Cleary, John P., 4,279,553, Cl. 408-135.000.

Heinemann, Henning: *See—*
Ohlendorf, Heinrich-Wilhelm; Wolf, Klaus-Ullrich; Kaupmann, Wilhelm; and Heinemann, Henning, 4,279,904, Cl. 424-246.000.

Heldt, Helge, to Aktiebolaget SKF. Device for obtaining axial mobility and avoiding radial play of a bearing ring in relation to a bearing seat. 4,279,451, Cl. 308-26.000.

Heller, David S., to Reichhold Chemicals, Incorporated. Froth coating of paper products and process for forming same. 4,279,964, Cl. 428-496.000.

Helm, Karl O.: *See—*
Maasbol, Alfred G.; and Sim, Alexander K., 4,279,914, Cl. 424-258.000.

Helmick, James E., to Dresser Industries, Inc. Earth boring bit with eccentric seal boss. 4,279,316, Cl. 175-371.000.

Henderson, Jerald M.; and Yong, Yuen-Cjen, to University of California, The Regents of the. Singulator. 4,279,336, Cl. 198-443.000.

Henes, Gerhard: *See—*
Meisert, Ernst; Bohne, Franz-Josef; Brecht, Klaus; Mormann, Werner; Krohn, Wolfgang; and Henes, Gerhard, 4,280,007, Cl. 521-159.000.

Henkel, Herbert W.; and Paradiso, Mary R., to American Cyanamid Company. Low alcohol content after-shave lotion. 4,279,891, Cl. 424-73.000.

Hennenfent, Douglas J.; Johnson, Robert A.; and Holmstrand, Allan L., to Magnetic Peripherals Inc. Method of manufacturing narrow track ferrite head cores. 4,279,102, Cl. 51-322.000.

Hennessy, John: *See—*
Bushman, James B.; Dimond, James R.; and Hennessy, John, 4,279,729, Cl. 204-196.000.

Henry, John: *See—*
Wheeler, Raymond L.; Henry, John; and Dadswell, John E., 4,279,322, Cl. 180-128.000.

Herbin, Jean E. E.; and Grammont, Paul D. A., to Diamond Shamrock Corporation. Process for the preparation of high density anion exchange resins by bromination of crosslinked vinyltoluene copolymers. 4,280,003, Cl. 521-31.000.

Hercules Incorporated: *See—*
DeSimone, Robert S., 4,280,011, Cl. 568-603.000.
Dumas, David H., 4,279,794, Cl. 260-29.2EP.

Hergeth KG Maschinenfabrik und Apparatebau: *See—*
Wirth, Walter, 4,279,060, Cl. 19-106.00R.

Herkes, Frank E. Production of high-quality aromatic amino azo compounds by the rearrangement of 1,3-diaryl triazenes. 4,279,815, Cl. 260-205.000.

Herman Grant Co., Inc.: *See—*
Grant, Herman L., 4,279,592, Cl. 432-105.000.

Herman Miller, Inc.: *See—*
Propst, Robert L., 4,279,204, Cl. 108-53.300.
Propst, Robert L.; Randolph, Travis M.; and Reyda, Theodore M., 4,280,019, Cl. 179-1.50M.

Herman, Robert W.; and Kearns, William J., to New World Computer Company, Inc. Actuator apparatus for magnetic disc recording systems. 4,280,157, Cl. 360-106.000.

Hermann Gottfried Schnabel Fa.: *See—*
Maasbol, Alfred G.; and Sim, Alexander K., 4,279,914, Cl. 424-258.000.

Hermes, Guillaume M. P. G.: *See—*
Haes, Freddy; Hermes, Guillaume M. P. G.; and Reijnhout, Cornelis M., 4,279,253, Cl. 128-355.000.

Heruth, Kenneth T.: *See—*
Valenta, James D.; and Heruth, Kenneth T., 4,279,250, Cl. 128-200.140.

Hetrick, Vernon L.: *See—*
Low, William H.; Hetrick, Vernon L.; and McCoy, Paul, 4,279,084, Cl. 37-42.00R.

Hetz, G. Brian, to Dayco Corporation. Loop picker and method of making same. 4,279,276, Cl. 139-159.000.

Heuber, Klaus; and Wiedmann, Siegfried K., to International Business Machines Corporation. Method and circuit arrangement for controlling an integrated semiconductor memory. 4,280,198, Cl. 365-203.000.

Hewlett-Packard Company: *See—*
Hornak, Thomas; Corcoran, John J.; and Maslak, Samuel H., 4,280,196, Cl. 365-45.000.
Maute, Alfred; Teitz, Konrad; Baier, Klaus; and Heid, Hans, 4,279,511, Cl. 356-328.000.
Rose, Donald K., 4,280,195, Cl. 365-39.000.

Heymer, Gero: *See—*
Maurer, Alexander; Schrodter, Klaus; and Heymer, Gero, 4,279,878, Cl. 423-321.00R.

Hicks, Donald L.: *See—*
Lindberg, Allen W.; Gantzert, Thomas R.; and Hicks, Donald L., 4,279,231, Cl. 123-489.000.

Hidai, Yutaka; and Okuda, Nobuo, to Tokyo Shibaura Denki Kabushiki Kaisha. Exposure apparatus using electron beams. 4,280,186, Cl. 364-518.000.

High Efficiency Insulation Technologies, Inc.: *See—*
Hacker, Dennis J., 4,279,111, Cl. 52-714.000.

Hildebrand, Peter C. R., to Arthur Guinness Son and Company. Preparation of beverages containing a head of froth. 4,279,938, Cl. 426-424.000.

Hill, Harold J.: *See—*
Knapp, Randolph H.; Lawson, Jimmie B.; Reisberg, Joseph; Thigpen, David R.; and Hill, Harold J., 4,279,305, Cl. 166-307.000.

Hill, Michael P. L.; and Tizard, Anthony N., to Dow Corning Limited. Soap composition containing an amino-substituted polysiloxane. 4,279,765, Cl. 252-117.000.

Hill, Richard N.; and Sanchez, Moises G., to W. R. Grace & Co. Oxidative control of post precipitation in phosphoric acid. 4,279,877, Cl. 423-321.00R.
Hill, Robert C.: *See—*
Nielson, Niel E.; Kreiling, Ronald L.; Hill, Robert C.; and Nice, Ralph A., 4,279,753, Cl. 210-605.000.
Hilti Aktiengesellschaft: *See—*
Lang, Gusztav, 4,279,340, Cl. 206-219.000.
Hiltner, David F., to Tektronix, Inc. Variable current source having a programmable current-steering network. 4,280,091, Cl. 323-315.000.
Himes, John W. Solar heat absorbing and radiating wall. 4,279,241, Cl. 126-431.000.
Himsley, Alexander. Continuous countercurrent ion exchange process. 4,279,755, Cl. 210-661.000.
Hines, Stephen P., to Eastman Kodak Company. Camera with flash through viewfinder. 4,279,488, Cl. 354-145.000.
Hines, Stephen P., to Eastman Kodak Company. Planar bellows. 4,279,492, Cl. 354-187.000.
Hinshaw, Stanley E.; and Cole, Charles F., Jr., to Conoco, Inc. Fluid presence detector. 4,279,078, Cl. 33-126.500.
Hinton, George F., to United States of America, Navy. Extremely sensitive super conducting quantum interference device constructed as a double-helix array. 4,280,095, Cl. 324-248.000.
Hirai, Hiromu; and Hamano, Shin, to Hitachi, Ltd. Apparatus for limiting acceleration in a servosystem. 4,280,083, Cl. 318-565.000.
Hirai, Toshio; and Niihara, Koichi, to Research Institute for Iron, Steel and Other Metals of the Tohoku University, The. Process for producing super hard-highly pure silicon nitrides. 4,279,689, Cl. 156-614.000.
Hiramatsu, Tamihei: *See—*
Kashima, Tsunehiro; Sakoda, Shunsuke; Tsuda, Hidetoshi; Hiramatsu, Tamihei; and Morita, Kazuyuki, 4,280,136, Cl. 358-93.000.
Hirano, Hitoshi: *See—*
Kunii, Shusaku; and Hirano, Hitoshi, 4,280,214, Cl. 368-282.000.
Hiranuma, Hiroshi: *See—*
Doi, Toshiaki; Suematsu, Shigeru; Nishida, Chikamasa; and Hiranuma, Hiroshi, 4,279,698, Cl. 176-22.000.
Hiraoka, Takayuki; and Fujiyoshi, Kenji, to Mitsui Petrochemical Industries, Ltd. Laminated film or sheet structure and process for production thereof. 4,279,957, Cl. 428-212.000.
Hiromori, Yasutaka: *See—*
Makishima, Hiroshi; Toyoda, Tsunehiko; Okamura, Noriaki; Yano, Hirofumi; Mizoguchi, Akira; and Hiromori, Yasutaka, 4,279,653, Cl. 106-22.000.
Hitachi Chemical Company, Ltd.: *See—*
Takagi, Kazumasa; Fukazawa, Tokuumi; and Oi, Tetsu, 4,279,772, Cl. 252-301.40F.
Hitachi, Ltd.: *See—*
Ashida, Eiji; Nihei, Masayasu; Wachi, Hiroshi; Sato, Akira; and Kokura, Satoshi, 4,280,137, Cl. 358-101.000.
Chino, Koichi; Yusa, Hideo; Oda, Akira; Miura, Hideichi; Horiuchi, Susumu; and Takamura, Yoshiyuki, 4,279,692, Cl. 159-6.00W.
Doi, Toshiaki; Suematsu, Shigeru; Nishida, Chikamasa; and Hiranuma, Hiroshi, 4,279,698, Cl. 176-22.000.
Ebata, Sakae; Watari, Masahide; Hayakumo, Sunao; and Oyamada, Osamu, 4,279,701, Cl. 176-87.000.
Hirai, Hiromu; and Hamano, Shin, 4,280,083, Cl. 318-565.000.
Kajiyama, Sigeru; Kanda, Kimio; and Sugiyama, Sakae, 4,279,158, Cl. 73-637.000.
Minato, Osamu; Masuhara, Toshiaki; Sasaki, Toshio; and Kubo, Masaharu, 4,280,065, Cl. 307-473.000.
Misumi, Akira; and Saito, Shunji, 4,279,784, Cl. 252-513.000.
Nonogaki, Saburo; and Hatano, Yoshio, 4,279,985, Cl. 430-280.000.
Ono, Yuichi; Ito, Kazuhiro; Mori, Mitsuhiro; Aoki, Masaaki; and Kurata, Kazuhiro, 4,280,131, Cl. 357-17.000.
Takato, Masao; Imai, Masumi; and Furuhashi, Toshio, 4,280,189, Cl. 364-734.000.
Tobita, Yuichi; and Okumura, Masamitsu, 4,279,233, Cl. 123-519.000.
Hitzky, Leon J., to Goodyear Tire & Rubber Company, The. High perimeter tread element. 4,279,283, Cl. 152-209.00R.
Hitzler, Otto; and Wunderlich, Winfried, to Rohm GmbH. Photopolymerization method with symmetric azo alkanes. 4,279,719, Cl. 204-159.230.
Hobart Corporation: *See—*
McCord, Dick P.; and Eberhardt, Mark E., Jr., 4,279,317, Cl. 177-185.000.
Hobson, Michael J., to United States of America, Navy. Non-reversible valve assembly. 4,279,403, Cl. 251-148.000.
Hochstein, Peter A. Electromagnetic field responder for respiration monitoring. 4,279,257, Cl. 128-722.000.
Hoechst Aktiengesellschaft: *See—*
Erpenbach, Heinz; Gehrmann, Klaus; Kubbeler, Hans-Klaus; and Lork, Winfried, 4,280,010, Cl. 560-205.000.
Maurer, Alexander; Schrodter, Klaus; and Heymer, Gero, 4,279,878, Cl. 423-321.00R.
Ong, Sienling, 4,279,615, Cl. 8-582.000.
Schrodter, Klaus; Gradl, Reinhard; Ehlers, Klaus-Peter; and Scheibitz, Wolfgang, 4,279,876, Cl. 423-305.000.
Wellbrock, Werner, 4,279,837, Cl. 260-505.00N.
Hoffman, John C., to Taylor, John F., a part interest. Localized body heat applicator device. 4,279,255, Cl. 128-402.000.
Hoffman-Werke GmbH: *See—*
Gotter, Eugen, 4,279,339, Cl. 206-3.000.
Hoffmann, Hellmut: *See—*
Fuchs, Rainer; Hoffmann, Hellmut; Hammann, Ingeborg; Homeyer, Bernhard; and Stendel, Wilhelm, 4,279,920, Cl. 424-282.000.
Hoffmann, Otto L.; and Kirkpatrick, Joel L., to Gulf Oil Corporation. Dichloroacetylimino herbicide antagonists as plant protection agents. 4,279,636, Cl. 71-90.000.
Hohmann, Jere W.: *See—*
Ransom, Stephen A.; Hohmann, Jere W.; and Nahmias, Clement, 4,280,212, Cl. 368-82.000.
Hohn, Herbert: *See—*
Schneider, Franz; Schumann, Burkhard; Maier, Karl; and Hohn, Herbert, 4,279,561, Cl. 414-591.000.
Hollandsche Beton Groep N.V.: *See—*
Jansz, Joost W., deceased, 4,279,313, Cl. 173-112.000.
Hollenbeck, Leroy F., Jr., to Perko, Inc. Boat battery selector switch combined with lock. 4,280,028, Cl. 200-44.000.
Holloway, Fred W., Jr., to Reynolds Metals Company. Heat-sealable and peelable laminated packaging construction. 4,279,344, Cl. 206-631.000.
Holmstrand, Allan L.: *See—*
Hennenfent, Douglas J.; Johnson, Robert A.; and Holmstrand, Allan L., 4,279,102, Cl. 51-322.000.
Homan, Gary R.; and Lee, Chi-long, to Dow Corning Corporation. Compositions including mercaptoorganopolysiloxanes and stannous salts of carboxylic acids. 4,279,792, Cl. 260-18.00S.
Homexx International Corp.: *See—*
Osborne, William E., 4,280,163, Cl. 361-172.000.
Homeyer, Bernhard: *See—*
Fuchs, Rainer; Hoffmann, Hellmut; Hammann, Ingeborg; Homeyer, Bernhard; and Stendel, Wilhelm, 4,279,920, Cl. 424-282.000.
Fuchs, Rainer; Naumann, Klaus; Lantzsch, Reinhard; Hagemann, Hermann; Hammann, Ingeborg; Homeyer, Bernhard; Behrenz, Wolfgang; and Stendel, Wilhelm, 4,279,923, Cl. 424-304.000.
Honda Giken Kogyo Kabushiki Kaisha: *See—*
Ban, Keisuke; Arai, Takeo; and Daimaru, Akimasa, 4,279,289, Cl. 164-97.000.
Honda, Zenjiro: *See—*
Ishii, Kiyoshi; Honda, Zenjiro; and Tsugaya, Hitoshi, 4,279,846, Cl. 264-41.000.
Honeywell Inc.: *See—*
Kompelien, Arlon D., 4,280,069, Cl. 307-571.000.
Venkatasetty, Hanumanthiya V., 4,279,973, Cl. 429-101.000.
Honl, Paul G.: *See—*
Bailey, Dale O.; and Honl, Paul G., 4,280,002, Cl. 435-298.000.
Honma, Masami: *See—*
Matsuda, Shunsuke; Tsuchiya, Soji; Honma, Masami; and Nagamatsu, Gentaro, 4,279,984, Cl. 430-270.000.
Honma, Zensho. Plastic bottle cap. 4,279,353, Cl. 215-254.000.
Hopkins, Grant; and Cantrell, Mark. Vehicle with adjustable steering axis angle control. 4,279,429, Cl. 280-267.000.
Hori, Mitutaka. Continuous treatment apparatus for treating waste material. 4,279,750, Cl. 210-357.000.
Horiba, Ltd.: *See—*
Horii, Yoshio, 4,279,728, Cl. 204-195.00R.
Horiguchi, Yasunobu: *See—*
Suganuma, Nobuo; Uematsu, Michio; Mandai, Hiroshi; Horiguchi, Yasunobu; and Masamizu, Koji, 4,279,888, Cl. 424-49.000.
Horii, Yoshio, to Horiba, Ltd. Apparatus for determining ion concentration. 4,279,728, Cl. 204-195.00R.
Horin, Shoji; Hayashi, Shizuo; and Okumura, Takeo, to Kao Soap Co., Ltd. Hair treating agent of the pre-shampoo type. 4,279,262, Cl. 132-7.000.
Horiuchi, Susumu: *See—*
Chino, Koichi; Yusa, Hideo; Oda, Akira; Miura, Hideichi; Horiuchi, Susumu; and Takamura, Yoshiyuki, 4,279,692, Cl. 159-6.00W.
Hornak, Thomas; Corcoran, John J.; and Maslak, Samuel H., to Hewlett-Packard Company. Correction of zero drift, gain drift, and distortion errors in analog storage devices. 4,280,196, Cl. 365-45.000.
Hornbaker, Edwin D.; and Eisenbraun, Allan A., to Ethyl Corporation. Polybromostyrene resin. 4,279,808, Cl. 260-45.75B.
Horsman, Dennis P.: *See—*
James, Robert C.; Horsman, Dennis P.; and Sorenson, Richard D., 4,279,116, Cl. 53-466.000.
Horst, Fach: *See—*
Wagener, Dietrich; Horst, Fach; and Ergun, Hayri, 4,280,033, Cl. 219-10.55A.
Horst, Ronald A.; and Hedrich, Ross R., to Odor Control Systems, Inc. Odor control system. 4,279,716, Cl. 204-149.000.
Horst, Russel J.: *See—*
Kwasnoski, Daniel; Sterner, Charles J.; Horst, Russel J.; and Burcaw, Kenneth R., 4,279,703, Cl. 202-158.000.
Hosaka, Kiyokazu: *See—*
Takagi, Takeji; and Hosaka, Kiyokazu, 4,279,245, Cl. 128-004.000.
Hosono, Takashi: *See—*
Tooyama, Akira; Tooyama, Takashi; and Hosono, Takashi, 4,280,134, Cl. 358-67.000.
Hough, William V.; Little, John L.; and Warheit, Kevin E., to Mine Safety Appliances Company. Method for the electroless deposition of palladium. 4,279,951, Cl. 427-437.000.
House Food Industrial Company Limited: *See—*
Koshida, Daikichi; Sugisawa, Ko; Kimura, Takashi; and Nakajima, Setsuo, 4,279,932, Cl. 426-89.000.

Houston, John M., to General Electric Company. Zero-current detector for high voltage DC transmission line. 4,280,093, Cl. 324-117.00R.
Houston Systems Manufacturing Co., Inc.: *See—*
Belveal, Robert E., 4,279,842, Cl. 261-124.000.
Hoverlift Systems Ltd.: *See—*
Harcourt, Colin H.; and Barker, D. Roy, 4,279,603, Cl. 440-90.000.
Huang, Cleo L., to Dow Chemical Company, The. Lipase determination method and reagent. 4,279,994, Cl. 435-19.000.
Huang, Thomas N. Decorative specular illuminator. 4,280,171, Cl. 362-240.000.
Huang, Tracy J.: *See—*
Haag, Werner O.; and Huang, Tracy J., 4,279,830, Cl. 518-700.000.
Huchette, Michel: *See—*
Verwaerde, Francoise; Leleu, Jean-Bernard; and Huchette, Michel, 4,279,931, Cl. 426-48.000.
Huett, Lenora M.: *See—*
Shofner, Manley R.; and Huett, Lenora M., 4,279,090, Cl. 40-617.000.
Huguenard, Albert P.: *See—*
Audran, Roger G. L.; and Huguenard, Albert P., 4,279,945, Cl. 427-130.000.
Huizinga, Menno, to Tetra Consultants Inc. Method of binding antigens to insoluble polymeric substances. 4,279,787, Cl. 260-8.000.
Huling, James K., to Barry-Wehmiller Company. Energy conservation for pasteurizer apparatus. 4,279,858, Cl. 422-25.000.
Hulsmann, Hans-Leo: *See—*
Pastura, Albino; Kelbch, Gerhard; and Hulsmann, Hans-Leo, 4,280,012, Cl. 568-755.000.
Hummel, Philip H. Break away nail. 4,279,190, Cl. 411-487.000.
Hunt, Arthur J.; and Hunt, Arthur J., Jr. Screw press with positive feed and accessible screens. 4,279,197, Cl. 100-117.000.
Hunt, Arthur J., Jr.: *See—*
Hunt, Arthur J.; and Hunt, Arthur J., Jr., 4,279,197, Cl. 100-117.000.
Husted, Douglas P. Mail box signal unit. 4,279,380, Cl. 232-35.000.
Huston, Paul O.; and Munn, Alfred. Gauge. 4,279,161, Cl. 73-743.000.
Hutchison, Wayne A.; and DeVore, Steven R., to American Original Corporation, The. Method for improving the odor, flavor and color of canned ocean clam products. 4,279,934, Cl. 426-262.000.
Hutmacher, Joan K. Fishing float container. 4,279,365, Cl. 224-42.420.
Hutson, Duane. Fishing weight. 4,279,092, Cl. 43-44.910.
Hyre, Robert W. Visual stimulation apparatus useful in therapeutic treatment. 4,279,088, Cl. 40-442.000.
Iddings, Paul J. Humane animal trap. 4,279,093, Cl. 43-81.500.
Ideal Industries, Inc.: *See—*
Wells, Peter M., Jr.; and Mitchell, Roger E., 4,280,092, Cl. 324-51.000.
Iizuka, Jinya: *See—*
Suga, Kyozo; Iizuka, Jinya; and Tsuji, Yoshiomi, 4,279,540, Cl. 405-115.000.
Ikenaka, Yoshiharu: *See—*
Miyagawa, Fumiko; Ikenaka, Yoshiharu; and Sakaguchi, Makoto, 4,279,182, Cl. 82-28.00R.
Illinois Tool Works Inc.: *See—*
Pleickhardt, George C., 4,279,341, Cl. 206-345.000.
Imai, Chikara: *See—*
Eda, Tadahiro; Tatsumi, Susumu; Imai, Chikara; and Koichi, Yasushi, 4,279,498, Cl. 355-14.00D.
Imai, Kiyokazu: *See—*
Yamashita, Shuzo; Shibatani, Kyoichiro; Takakura, Kiochi; and Imai, Kiyokazu, 4,279,795, Cl. 260-29.6RW.
Imai, Masumi: *See—*
Takato, Masao; Imai, Masumi; and Furuhashi, Toshio, 4,280,189, Cl. 364-734.000.
Imperial Chemical Industries Limited: *See—*
Davies, David H.; and Norris, Geoffrey L. F., 4,279,894, Cl. 424-122.000.
IMS Ltd.: *See—*
Kozek, Edward P., 4,280,164, Cl. 361-179.000.
Incaudo, Peter J., Jr.: *See—*
Szabo, Robert C.; and Incaudo, Peter J., Jr., 4,279,224, Cl. 123-52.0MV.
Incoe Corporation: *See—*
Osuna-Diaz, Jesus M., 4,279,582, Cl. 425-159.000.
Inculet, Ion I.; Castle, George S. P.; and Sullivan, John L., to Canadian Patents & Development Ltd. Electrostatic system for concentrating, propelling and collecting airborne particulates for industrial furnaces. 4,279,625, Cl. 55-131.000.
Independent Broadcasting Authority: *See—*
Baldwin, John L. E., 4,280,147, Cl. 360-10.000.
Industrie Pirelli Societa per Azioni: *See—*
Portinari, Antonio; and Longoni, Sergio, 4,279,470, Cl. 350-96.230.
Inoue, Hiromichi: *See—*
Inukai, Takashi; Inoue, Hiromichi; Furukawa, Kenji; Sato, Hideo; and Sugimori, Shigeru, 4,279,770, Cl. 252-299.620.
Inoue-Japax Research Incorporated: *See—*
Inoue, Kiyoshi, 4,279,748, Cl. 210-222.000.
Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. High-field gradient magnetic separator. 4,279,748, Cl. 210-222.000.
Institut National de la Sante et de la Recherche Medicale: *See—*
Vert, Michel; Chabot, Francois; Leray, Jean; and Christel, Pascal, 4,279,249, Cl. 128-92.00D.
Institute po Physikochimia: *See—*
Ivanov, Rumen V.; Nikolov, Dobrin V.; Bilsing, Ulrich; Weber, Heinz; and Schmidt, Manfred, 4,279,742, Cl. 209-166.000.
Institute po Zashtita na Metalite ot Korroziya: *See—*
Novev, Todor V.; Ovcharov, Sava D.; Yordanov, Nikola S.; Acheva, Jivka P.; Yordanov, Yordan I.; and Mandova, Maria L., 4,279,708, Cl. 204-46.00R.
Intercontinental Development Corporation: *See—*
Campbell, Thomas P., 4,279,741, Cl. 209-44.000.
International Business Machines Corporation: *See—*
Anderson, Nathaniel C.; and Grover, Charles R., Jr., 4,279,707, Cl. 204-43.00T.
Bacon, James L., 4,280,144, Cl. 358-280.000.
Blanco, Abelardo D.; Boynton, William W.; and Weber, Charles J., 4,279,199, Cl. 101-93.050.
Brown, Leon C.; Fitts, Uscoe J.; and Polakowski, David R., 4,279,504, Cl. 355-72.000.
Heath, John S., 4,279,520, Cl. 400-124.000.
Heuber, Klaus; and Wiedmann, Siegfried K., 4,280,198, Cl. 365-203.000.
Judd, Ian D., 4,280,143, Cl. 358-260.000.
Kightlinger, Drew A., 4,279,521, Cl. 400-124.000.
Ringle, Terry W., 4,279,523, Cl. 400-279.000.
Schlig, Eugene S., 4,280,197, Cl. 365-154.000.
Schorr, Herbert; and Waldawsky-Berger, Irving, 4,280,177, Cl. 364-200.000.
Tan, Kwang G., 4,280,176, Cl. 364-200.000.
Voegeli, Otto, 4,280,194, Cl. 365-7.000.
International Harvester Company: *See—*
Brandl, Michael C.; Kataoka, David T.; and Bowman, George E., 4,279,320, Cl. 180-69.00R.
International Standard Electric Corporation: *See—*
Brown, Patrick, 4,280,080, Cl. 315-368.000.
Crossland, William A., 4,279,152, Cl. 73-356.000.
Ege, Sigmund, 4,280,016, Cl. 174-102.00R.
International Telephone and Telegraph Corporation: *See—*
Borsuk, Leslie M.; Ciardiello, Catherine R.; and Heath, Henry S., Jr., 4,279,467, Cl. 350-96.210.
Bussen, Michael R.; and Winter, David F., 4,279,461, Cl. 339-246.000.
Ivey, Francis J., 4,279,058, Cl. 17-46.000.
Intrex Research Corporation: *See—*
Bodor, Nicholas S.; and Sloan, Kenneth B., 4,279,900, Cl. 424-241.000.
Inukai, Takashi; Inoue, Hiromichi; Furukawa, Kenji; Sato, Hideo; and Sugimori, Shigeru, to Chisso Corporation. Liquid crystal 2,3-dicyano-hydroquinone derivatives. 4,279,770, Cl. 252-299.620.
Ioli, Luigi: *See—*
Lampredi, Aurelio; Leoni, Aldo; and Ioli, Luigi, 4,279,226, Cl. 123-90.550.
Iowa State University Research Foundation, Inc.: *See—*
Larock, Richard C., 4,279,823, Cl. 260-343.210.
Ishibashi, Takao; and Osonoi, Kenjiro, to Osawa Precision Industries, Ltd. Information display arrangement for camera. 4,279,481, Cl. 352-171.000.
Ishida, Hitoshi: *See—*
Oka, Yoshihiko; Ishida, Hitoshi; Morioka, Moto; Numusaki, Yoso; Yamafuji, Tsutomu; Osono, Takashi; and Umezawa, Hamao, 4,279,997, Cl. 435-80.000.
Ishida, Kohji; and Numata, Tatsuo, to Pioneer Electronic Corporation. Stereophonic signal demodulation circuit. 4,280,101, Cl. 329-167.000.
Ishida, Nakao; Satoh, Hiroshi; Suzuki, Fujio; and Miyao, Kouhei, to Asai Germanium Research Institute. Organogermanium induction of interferon production. 4,279,892, Cl. 424-85.000.
Ishigaki, Yoshio: *See—*
Mogi, Takao; Ishigaki, Yoshio; and Okada, Hisao, 4,280,139, Cl. 358-165.000.
Ishii, Kiyoshi; Honda, Zenjiro; and Tsugaya, Hitoshi, to Daicel Chemical Industries, Ltd. Process for preparing semipermeable membrane having selective permeability. 4,279,846, Cl. 264-41.000.
Ishikawa, Tomozi: *See—*
Ando, Masahisa; Kato, Keigo; and Ishikawa, Tomozi, 4,279,323, Cl. 180-148.000.
Isobe, Mitsuhide: *See—*
Nagano, Masashi; and Isobe, Mitsuhide, 4,279,172, Cl. 474-82.000.
Isogai, Yo: *See—*
Okamoto, Toshihiko; Isogai, Yo; Shudo, Koichi; and Takahashi, Soshiro, 4,279,639, Cl. 71-94.000.
Isogaya, Keiichi, to Marusho Industrial Co., Ltd. Light-material segregating method and apparatus. 4,279,740, Cl. 209-12.000.
Isuzu Motors Ltd.: *See—*
Minamitani, Fumio, 4,279,176, Cl. 74-493.000.
Ito, Kazuhiro: *See—*
Ono, Yuichi; Ito, Kazuhiro; Mori, Mitsuhiro; Aoki, Masaaki; and Kurata, Kazuhiro, 4,280,131, Cl. 357-17.000.
Ito, Naoya; Saito, Kiichi; Yoshida, Takeshi; Aoki, Masahiro; Okubo, Masao; and Miki, Masayoshi, to Sumitomo Chemical Company, Limited; and Nippon Stainless Steel Co., Ltd. High silicon chromium nickel steel for strong nitric acid. 4,279,648, Cl. 75-128.00C.
Ito, Teruyuki; and Suzuki, Yasuo, to Toyoda Koki Kabushiki Kaisha. Workpiece transfer apparatus for machine tool. 4,279,560, Cl. 414-589.000.
Ito, Tsunetoshi: *See—*
Takahashi, Ken; and Ito, Tsunetoshi, 4,279,443, Cl. 299-1.000.
Itoh, Masaki: *See—*
Ohnishi, Yoshitake; Itoh, Masaki; Mizuno, Kenji; and Gokan, Hiroshi, 4,279,986, Cl. 430-280.000.
ITT Industries, Inc.: *See—*
Berisch, Volker, 4,279,448, Cl. 303-6.00C.

Lupertz, Hans-Henning, 4,279,331, Cl. 188-73.300.
Stewart, Clive E. E.; Rosser, William J. N.; and Ansell, Martin P., 4,279,785, Cl. 252-518.000.
Ivanov, Rumen V.; Nikolov, Dobrin V.; Bilsing, Ulrich; Weber, Heinz; and Schmidt, Manfred, to Institute po Physikochimia. Method of and apparatus for the flotation of mineral raw materials. 4,279,742, Cl. 209-166.000.
Ivey, Francis J., to International Telephone and Telegraph Corporation. Process for removing meat from bones. 4,279,058, Cl. 17-46.000.
Iwasaki, Masayuki; Nagashima, Akira; and Sato, Shigeru, to Fuji Photo Film Co., Ltd. Photosensitive compositions. 4,279,982, Cl. 430-170.000.
Iwasaki Tsushinki Kabushiki Kaisha: *See*—
Sekiguchi, Koichi; Takematsu, Hikaru; and Tatsukura, Kazutada, 4,280,022, Cl. 179-99.00A.
Iwashita, Tomonori: *See*—
Mashimo, Yukio; Iwashita, Tomonori; and Fukahori, Hidehiko, 4,279,490, Cl. 354-173.000.
Izumi, Isao: *See*—
Shimotori, Kazumi; Izumi, Isao; and Murabayashi, ideki, 4,280,046, Cl. 219-544.000.
Izumi, Yusuke; Miyazaki, Hidetaka; and Kawahara, Shin-ichi, to Tokuyama Soda Kabushiki Kaisha. Process for producing hydrogen peroxide. 4,279,883, Cl. 423-584.000.
J. I. Case Company: *See*—
Bushmeyer, Richard W.; and Schwabe, Thomas M., 4,279,446, Cl. 301-20.000.
Marto, John H., 4,279,179, Cl. 74-850.000.
J. M. Voith GmbH: *See*—
Esser, Reinhard, 4,279,949, Cl. 427-356.000.
Jackman, Joseph R., to Reactive Metals & Alloys Corporation. Magnesium bearing compositions for and method of steel desulfurization. 4,279,643, Cl. 75-58.000.
Jackman, Joseph R.; and Hanna, Wayne E., to Reactive Metals & Alloys Corporation. Titanium bearing addition alloys. 4,279,650, Cl. 75-175.500.
Jackson, Dennis B., to Wiltshire Cutlery Company Proprietary Limited. Scissors. 4,279,076, Cl. 30-254.000.
Jacobs, Glenn A.: *See*—
Hauck, Frederic P.; and Jacobs, Glenn A., 4,279,902, Cl. 424-246.000.
Jacobs, Michael E. Musical instrument harness. 4,279,367, Cl. 224-257.000.
Jacobs, Stanley A. Container lid. 4,279,358, Cl. 220-321.000.
Jacobson, Carl C., Jr.; and Crosby, Gaius P., to Crafco, Inc. Pavement joint and crack cleaning machine. 4,279,056, Cl. 15-373.000.
Jagenberg-Werke AG: *See*—
Buchholz, Rainer; Zodrow, Rudolf; and Rosenberg, Heinz J., 4,279,687, Cl. 156-568.000.
Jaggi, Hans; Mathison, Pat; and DeBartolo, Paul, to PES Photographic Equipment Service Inc. Film processing involving noxious substance removal. 4,279,055, Cl. 15-302.000.
Jakobs, Karlhans: *See*—
Schulze, Hans; Walz, Klaus; Jakobs, Karlhans; and Boehmke, Gunther, 4,279,614, Cl. 8-533.000.
James, Robert C.; Horsman, Dennis P.; and Sorenson, Richard D., to Hayssen Manufacturing Company. Method of and apparatus for wrapping. 4,279,116, Cl. 53-466.000.
Jansz, Joost W., deceased (by l'Ecluse, Henriette C. Jansz-de, heir), to Hollandsche Beton Groep N.V. Under water pile driver. 4,279,313, Cl. 173-112.000.
Jarlan, Gerard E. Flow-guiding monolithic blocks for marine structures. 4,279,536, Cl. 405-31.000.
Jarosch, Walter J.: *See*—
Kuhnlein, Hans; and Jarosch, Walter J., 4,279,693, Cl. 159-47.0WL.
Jarre, Wolfgang: *See*—
DeBeuckelaer, Gerard; Jarre, Wolfgang; Wurmb, Rolf; and Marx, Matthias, 4,279,757, Cl. 210-671.000.
Jean Walterscheid GmbH: *See*—
Schott, Wilhelm, 4,279,431, Cl. 280-508.000.
Jeblick, Werner; Roos, Ernst; Kempermann, Theo; and Abele, Manfred, to Bayer Aktiengesellschaft. Mixtures of azodicarbonamide and E-amidosulphones and their production and use as a blowing agent. 4,280,004, Cl. 521-89.000.
JECO Co. Ltd.: *See*—
Mori, Toshihiro, 4,280,160, Cl. 361-3.000.
Jenkins, Donald E., to Willamette Industries, Inc. Top gap folding box having a top closure interlock. 4,279,378, Cl. 229-39.00R.
Jenkins, Joseph E. Protective cover for the face plate of a motorcycle-type radio. 4,280,226, Cl. 455-345.000.
Jenks, Harry E. Well pump breaking tool. 4,279,067, Cl. 29-239.000.
Jensen, Finn U. H.: *See*—
Bruhn, Peter E.; and Jensen, Finn U. H., 4,279,541, Cl. 405-119.000.
Jesse, Erich; and Leussink, Reinhard, to Robert Bosch GmbH. Overvoltage protected solid-state ignition system. 4,280,166, Cl. 361-253.000.
Jessop, Thomas C., to Eastman Kodak Company. Cartridge discriminator for an automated analysis system. 4,279,861, Cl. 422-67.000.
Jidosha Kiki Co., Ltd.: *See*—
Satoh, Satoru, 4,279,193, Cl. 91-376.00R.
Joest, Herbert: *See*—
Erpenbach, Heinz; Guhrmann, Klaus; and Joest, Herbert, 4,280,009, Cl. 560-205.000.
Joh. A. Benckiser GmbH: *See*—
Kruger, Friedrich; and Michel, Walter, 4,279,758, Cl. 210-700.000.
Johannessen, Leif: *See*—
Lande, Harald; and Johannessen, Leif, 4,279,529, Cl. 403-246.000.
Johansson, Carl B., to Aimpoint AB. Firearms. 4,279,191, Cl. 89-185.000.
John, E. Roy. Rapid automatic electroencephalographic evaluation. 4,279,258, Cl. 128-731.000.
John, Rainmar: *See*—
Meyer, Rainer-Leo; John, Rainmar; Eisenhauer, Bernhard; and Baumstark, Herta, 4,279,962, Cl. 428-332.000.
Johnard, Bengt O., to Forbo Betriebs AG. Web with relief-structured surface and method of making the same. 4,279,954, Cl. 428-158.000.
Johnsen, Kenneth E.: *See*—
Nelson, Alfred R.; and Johnsen, Kenneth E., 4,279,797, Cl. 260-33.40R.
Johnson & Johnson Baby Products Company: *See*—
Passafiume, Anthony, 4,279,369, Cl. 225-3.000.
Johnson, LaVell R.: *See*—
Reese, Max G.; Ransom, Dennis K.; and Johnson, LaVell R., 4,279,885, Cl. 424-1.000.
Johnson, Milton J., to Whirlpool Corporation. Refuse compactor slide bearing. 4,279,198, Cl. 100-229.00A.
Johnson, Robert A.: *See*—
Hennenfent, Douglas J.; Johnson, Robert A.; and Holmstrand, Allan L., 4,279,102, Cl. 51-322.000.
Johnston, John N., to Litton Business Systems, Inc. Calculator printer having an acoustic noise suppressor. 4,279,525, Cl. 400-656.000.
Jojima, Teruomi; Takeshiba, Hideo; and Takahi, Yukiyoshi, to Sankyo Company Limited. Pyridazine derivatives and their use as agricultural fungicides. 4,279,908, Cl. 424-248.550.
Jones, Dorothy L.; and Conant, Frank R., to William Underwood Company. Maltol treated canned meat process. 4,279,936, Cl. 426-265.000.
Jones, Henry B.; and Smith, Randlow, to Texaco Inc. Gas-gas quench cooling and solids separation process. 4,279,622, Cl. 48-197.00R.
Jones, Howell A., Jr.; and McFiggans, Robert B., to Pitney Bowes Inc. Postage meter having interactive arithmetic operation capability. 4,280,179, Cl. 364-464.000.
Jones, Paul H., to P. H. Jones Hydrogeology, Inc. Natural gas production from geopressured aquifers. 4,279,307, Cl. 166-314.000.
Jordan, David A.: *See*—
Benson, Arthur L.; and Jordan, David A., 4,279,979, Cl. 429-254.000.
Joseph, Clive E. Clothes peg. 4,279,063, Cl. 24-138.000.
Joubert, Daniel; and Vrisakis, Georges, to Rhone-Poulenc Industries. Detergent compositions comprised of non-abrasive siliceous scouring agents. 4,279,766, Cl. 252-174.250.
Jovanovics, Karola; Szasz, Kalman; Kellner, Bela; Nemeth, Laszlo; Relle, Zsuzsa; Bittner, Emil; Dezseri, Eszter; and Eles, Janos, to Richter Gedeon Vegyszeti Gyar Rt. N-Formyl leurosine derivatives in a dosage form effective for treating lymphoid leukemia. 4,279,816, Cl. 260-244.400.
Jovanovics, Karola; Szasz, Kalman; Kellner, Bela; Nemeth, Laszlo; Relle, Zsuzsa; Bittner, Emil; Deszeri, Eszter; and Eles, Janos, to Richter Gedeon Vegyeszeti Gyar Rt. Method of treatment using new leurosine derivatives. 4,279,915, Cl. 424-262.000.
Jovanovics, Karola; Szasz, Kalman; Kellner, Bela; Nemeth, Laszlo; Relle, Zsuzsa; Bittner, Emil; Deszeri, Eszter; and Eles, Janos, to Richter Gedeon Vegyeszeti Gyar Rt. Method of treatment using new leurosine derivatives. 4,279,916, Cl. 424-262.000.
Joyce, Hardin, Jr., to Fiat-Allis Construction Machinery, Inc. Hydraulic control system for vehicle axle suspension. 4,279,319, Cl. 180-12.000.
Judd, Ian D., to International Business Machines Corporation. Method and means for scale-changing an array of boolean coded points. 4,280,143, Cl. 358-260.000.
Kabi AB: *See*—
Claeson, Karl G.; Aurell, Leif E.; Simonsson, Leif R.; and Arielly, Salo, 4,279,810, Cl. 260-112.50R.
Kabushiki Kaisha Hosokawa Funtai Kogaku Kenkyusho: *See*—
Yokoyama, Tohei; Asakura, Shintaro; Urayama, Kiyoshi; and Fujii, Kenji, 4,279,165, Cl. 73-826.000.
Kabushiki Kaisha Mikuni Seisakusho: *See*—
Nakajima, Yoshikazu, 4,279,790, Cl. 260-17.40R.
Kabushiki Kaisha Suwa Seikosha: *See*—
Maezawa, Shuji, 4,280,207, Cl. 368-21.000.
Shionozaki, Yoshio; Kanbe, Sakao; and Takei, Katsumori, 4,279,771, Cl. 252-299.630.
Kachnik, Joseph E. Positive drive conveyor system. 4,279,337, Cl. 198-472.000.
Kaganovsky, Gary P.: *See*—
Medovar, Boris I.; Baglai, Vitaly M.; Us, Vasily I.; Bogachenko, Alexei G.; Timashov, Grigory A.; Fedorovsky, Boris B.; Bondarenko, Oleg P.; Shtanko, Jury P.; Artamonov, Viktor L.; Pavlov, Leonid V.; Eltsov, Konstantin S.; Stetsenko, Nikolai V.; Kaganovsky, Gary P.; Korotkov, Albert N.; and Popov, Sergei S., 4,279,642, Cl. 75-10.00C.
Kajiyama, Sigeru; Kanda, Kimio; and Sugiyama, Sakae, to Hitachi, Ltd.; and Babcock-Hitachi Kabushiki Kaisha. Ultrasonic flaw detector driving apparatus. 4,279,158, Cl. 73-637.000.
Kakei, Masamitsu: *See*—
Tsutsui, Kenziro; and Kakei, Masamitsu, 4,280,078, Cl. 315-39.510.
Kaldenbach, Erwin: *See*—
Stodt, Eberhard; and Kaldenbach, Erwin, 4,279,557, Cl. 414-400.000.

Kali-Chemie Pharma GmbH: *See*—
Ohlendorf, Heinrich-Wilhelm; Wolf, Klaus-Ullrich; Kaupmann, Wilhelm; and Heinemann, Henning, 4,279,904, Cl. 424-246.000.
Ohlendorf, Heinrich-Wilhelm; Wolf, Klaus-Ullrich; and Kaupmann, Wilhelm, 4,279,905, Cl. 424-246.000.
Kaltz, Milton C.: *See*—
Prechter, Heinz C.; and Kaltz, Milton C., 4,279,441, Cl. 296-218.000.
Kamalich, Anthony J.: *See*—
Evrard, Gerald D.; Cook, Henry S.; and Kamalich, Anthony J., 4,279,052, Cl. 15-93.00A.
Kamei, Mitsuru: *See*—
Fukada, Tomihiro; and Kamei, Mitsuru, 4,279,160, Cl. 73-708.000.
Kameyama, Toshiaki: *See*—
Kojima, Kenji; Ota, Sakae; Katsumata, Akio; Kameyama, Toshiaki; Watanabe, Toshio; and Koike, Tadao, 4,279,501, Cl. 355-15.000.
Kamimura, Yoichi: *See*—
Yoshioka, Issei; and Kamimura, Yoichi, 4,279,996, Cl. 435-69.000.
Kammerman, Steven B.; Kawasaki, Frank; and Molloy, Albert G., Jr. Playing court. 4,279,414, Cl. 272-3.000.
Kamo, Izumi; and Okahara, Tetsushi. Process for the recovery and reutilization of the used materials in existing asphalt pavements. 4,279,660, Cl. 106-281.00R.
Kanbe, Sakao: *See*—
Shionozaki, Yoshio; Kanbe, Sakao; and Takei, Katsumori, 4,279,771, Cl. 252-299.630.
Kanda, Kimio: *See*—
Kajiyama, Sigeru; Kanda, Kimio; and Sugiyama, Sakae, 4,279,158, Cl. 73-637.000.
Kanzaki Paper Manufacturing Co., Ltd.: *See*—
Fujioka, Hironari; and Matsubayashi, Hajime, 4,279,961, Cl. 428-328.000.
Kao Soap Co., Ltd.: *See*—
Horin, Shoji; Hayashi, Shizuo; and Okumura, Takeo, 4,279,262, Cl. 132-7.000.
Yagi, Kouichi; and Nakagawa, Yunosuke, 4,279,769, Cl. 252-186.000.
Kappes, Joseph L., to Baldwin Piano & Organ Company. Digital arpeggio system for electronic musical instrument. 4,279,187, Cl. 84-1.030.
Karakov, Vladimir D.: *See*—
Buryakov, Valery M.; Kolotilov, Nikolai N.; Tokhunts, Roman D.; Yakovlev, Vladimir S.; Akulov, Vladislav A.; Zabotin, Viktor G.; Levin, Viktor Y.; Lukachev, Viktor P.; Pervyshin, Alexandr N.; Zaitsev, Konstantin A.; Karakov, Vladimir D.; and Khasanov, Mubaraksha D., 4,279,405, Cl. 266-55.000.
Karinthi, Pierre: *See*—
Guillaume, Paul; Karinthi, Pierre; and Nicolas, Jacques, 4,279,208, Cl. 110-346.000.
Karlsson, Per-Olle, to Svenskt Stal Aktiebolag. Test plate method and an arrangement for testing the serviceability and for setting and calibrating a test apparatus for the non-destructive electrical or magnetic testing of metallic blanks. 4,280,094, Cl. 324-202.000.
Karthe, Wolfgang; and Wehrsdorfer, Eike, to Akademie der Wissenschaften der DDR. Spectrometer for measuring spatial distributions of paramagnetic centers in solid bodies. 4,280,096, Cl. 324-316.000.
Kasamatsu, Kiyoshi: *See*—
Suzuki, Yukio; Kasamatsu, Kiyoshi; and Aketa, Kohichi, 4,279,924, Cl. 424-304.000.
Kashima, Tsunehiro; Sakoda, Shunsuke; Tsuda, Hidetoshi; Hiramatsu, Tamihei; and Morita, Kazuyuki, to Sony Corporation. Tape cassette and label inspection system therefor. 4,280,136, Cl. 358-93.000.
Kasiewicz, Stanley J. Voltage regulator. 4,280,087, Cl. 322-28.000.
Kataoka, David T.: *See*—
Brandl, Michael C.; Kataoka, David T.; and Bowman, George E., 4,279,320, Cl. 180-69.00R.
Kato, Keigo: *See*—
Ando, Masahisa; Kato, Keigo; and Ishikawa, Tomozi, 4,279,323, Cl. 180-148.000.
Kato, Tetsuo; Abeyama, Shozo; Kimura, Atsuyoshi; and Nakamura, Sadayuki, to Daido Tokushuko Kabushiki Kaisha. Free cutting steel containing sulfide inclusion particles with controlled aspect, size and distribution. 4,279,646, Cl. 75-123.0AA.
Kato, Tetsuro, to Sony Corporation. Video signal processing circuit. 4,280,133, Cl. 358-8.000.
Katsumata, Akio: *See*—
Kojima, Kenji; Ota, Sakae; Katsumata, Akio; Kameyama, Toshiaki; Watanabe, Toshio; and Koike, Tadao, 4,279,501, Cl. 355-15.000.
Katz, Sam. Exercising device. 4,279,415, Cl. 272-70.000.
Kaufman, Kurt D., to Thomas C. Elder, Inc. Photosensitizing benzofuranacrylics. 4,279,922, Cl. 424-285.000.
Kaupmann, Wilhelm: *See*—
Ohlendorf, Heinrich-Wilhelm; Wolf, Klaus-Ullrich; Kaupmann, Wilhelm; and Heinemann, Henning, 4,279,904, Cl. 424-246.000.
Ohlendorf, Heinrich-Wilhelm; Wolf, Klaus-Ullrich; and Kaupmann, Wilhelm, 4,279,905, Cl. 424-246.000.
Kawahara, Shin-ichi: *See*—
Izumi, Yusuke; Miyazaki, Hidetaka; and Kawahara, Shin-ichi, 4,279,883, Cl. 423-584.000.
Kawai, Syuji: *See*—
Sueoka, Akinori; Okamoto, Takehiko; Ohmori, Akio; Kawai, Syuji; and Ueda, Minoru, 4,279,752, Cl. 210-500.200.
Kawakami, Tsugimi: *See*—
Yokomori, Mituo; and Kawakami, Tsugimi, 4,280,063, Cl. 307-141.400.
Kawasaki, Frank: *See*—
Kammerman, Steven B.; Kawasaki, Frank; and Molloy, Albert G., Jr., 4,279,414, Cl. 272-3.000.
Kawasaki, Yoshitaka: *See*—
Ohmukai, Yoshimi; Tomisawa, Takeshi; and Kawasaki, Yoshitaka, 4,279,589, Cl. 431-328.000.
Kawazoe, Soichi. Ski edging device for a ski supported vehicle or the like. 4,279,427, Cl. 280-16.000.
Kazan, Benjamin, to Xerox Corporation. Thin vacuum panel display device. 4,280,125, Cl. 340-795.000.
Kazuto Nakazawa, General Director Public Works Research Institute Ministry of Construction: *See*—
Suga, Kyozo; Iizuka, Jinya; and Tsuji, Yoshiomi, 4,279,540, Cl. 405-115.000.
Kearns, William J.: *See*—
Herman, Robert W.; and Kearns, William J., 4,280,157, Cl. 360-106.000.
Kehrer, Gerald P.; and Smith, William G., to Dow Corning Corporation. Electrically conductive silicone elastomers. 4,279,783, Cl. 252-511.000.
Kelbch, Gerhard: *See*—
Pastura, Albino; Kelbch, Gerhard; and Hulsmann, Hans-Leo, 4,280,012, Cl. 568-755.000.
Kellner, Bela: *See*—
Jovanovics, Karola; Szasz, Kalman; Kellner, Bela; Nemeth, Laszlo; Relle, Zsuzsa; Bittner, Emil; Dezseri, Eszter; and Eles, Janos, 4,279,816, Cl. 260-244.400.
Jovanovics, Karola; Szasz, Kalman; Kellner, Bela; Nemeth, Laszlo; Relle, Zsuzsa; Bittner, Emil; Deszeri, Eszter; and Eles, Janos, 4,279,915, Cl. 424-262.000.
Jovanovics, Karola; Szasz, Kalman; Kellner, Bela; Nemeth, Laszlo; Relle, Zsuzsa; Bittner, Emil; Deszeri, Eszter; and Eles, Janos, 4,279,916, Cl. 424-262.000.
Kelly, Lawrence J., to Baldwin Piano & Organ Company. Bass drum spur and stabilizer assembly. 4,279,189, Cl. 84-421.000.
Kelsey-Hayes Company: *See*—
Neill, Daniel L.; and Tribe, Leonard T., 4,279,162, Cl. 73-746.000.
Kempermann, Theo: *See*—
Jeblick, Werner; Roos, Ernst; Kempermann, Theo; and Abele, Manfred, 4,280,004, Cl. 521-89.000.
Kentor, William E., to Servbest Foods, Inc. Dry sausage processing with added acid. 4,279,935, Cl. 426-264.000.
Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung: *See*—
Overhoff, Theodor; Schulten, Rudolf; Singh, Jasbir; Sylvester, Gerd; and Witte, Josef, 4,279,697, Cl. 176-22.000.
Ringel, Helmut; Zimmer, Erich; and Abdelmonem, Nabil, 4,279,866, Cl. 423-7.000.
Kerr-McGee Corporation: *See*—
Coulson, Norman W., 4,279,869, Cl. 423-54.000.
Riggs, Olen L., Jr., 4,279,705, Cl. 204-1.500.
Kerr-McGee Refining Corporation: *See*—
Roach, Jack W., 4,279,739, Cl. 208-309.000.
Kersten, Herbert H. Rotary valve engine. 4,279,225, Cl. 123-80.0BB.
Kervistin, Robert; and Lardellier, Alain M. J., to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation. Apparatus for measuring the temperature of a gas flow traversing a grid of blades. 4,279,153, Cl. 73-357.000.
Kessler, Milton; and Kessler, Ronald N. Roller skate carrier. 4,279,366, Cl. 294-162.000.
Kessler, Ronald N.: *See*—
Kessler, Milton; and Kessler, Ronald N., 4,279,366, Cl. 294-162.000.
Ketchum, David D.: *See*—
Weiner, Nathan K.; Weyman, Peter J.; and Ketchum, David D., 4,280,184, Cl. 364-506.000.
Khasanov, Mubaraksha D.: *See*—
Buryakov, Valery M.; Kolotilov, Nikolai N.; Tokhunts, Roman D.; Yakovlev, Vladimir S.; Akulov, Vladislav A.; Zabotin, Viktor G.; Levin, Viktor Y.; Lukachev, Viktor P.; Pervyshin, Alexandr N.; Zaitsev, Konstantin A.; Karakov, Vladimir D.; and Khasanov, Mubaraksha D., 4,279,405, Cl. 266-55.000.
Kiessling, Werner; and Lookhof, Wolfgang, to Messer Griesheim. Apparatus for arc welding or plasma cutting. 4,280,041, Cl. 219-121.0PT.
Kiffen, Aleidus A.: *See*—
Boomgaard, Ritse E.; Buter, Roelof; and Kiffen, Aleidus A., 4,279,800, Cl. 260-39.00P.
Kightlinger, Drew A., to International Business Machines Corporation. Wire matrix print head. 4,279,521, Cl. 400-124.000.
Kilara, Arun: *See*—
Shahani, Khemchand M.; Wagner, Frederick W.; and Kilara, Arun, 4,279,998, Cl. 435-174.000.
Kilburn, James, to Occidental Oil Shale, Inc. Jetting out weak areas for forming an in situ oil shale retort. 4,279,444, Cl. 299-2.000.
Kim, Tong S.; and Lee, John S., to Borg-Warner Corporation. Compact oil separator for rotary compressor. 4,279,578, Cl. 418-97.000.
Kimura, Atsuyoshi: *See*—
Kato, Tetsuo; Abeyama, Shozo; Kimura, Atsuyoshi; and Nakamura, Sadayuki, 4,279,646, Cl. 75-123.0AA.
Kimura, Tadashi, to Olympus Optical Co., Ltd. Apparatus for measuring a range to a subject. 4,279,484, Cl. 354-25.000.
Kimura, Takashi: *See*—
Koshida, Daikichi; Sugisawa, Ko; Kimura, Takashi; and Nakajima, Setsuo, 4,279,932, Cl. 426-89.000.
King, Roderick V., to Ethyl Corporation. Closure with oxygen scavenging system. 4,279,350, Cl. 215-228.000.

Kinoshita, Kunio, to Olympus Optical Co., Ltd. Endoscope having a plurality of optical systems each provided with an identification mark element. 4,279,247, Cl. 128-6.000.

Kirchmayr, Rudolf; and Felder, Louis, to Ciba-Geigy Corporation. Mercaptophenyl ketones as initiators for the photopolymerization of ethylenically unsaturated compounds. 4,279,721, Cl. 204-159.240.

Kirilchik, Alexandr I.: *See—*
Lyakhevich, Genrikh D.; Belkevich, Petr I.; Rudkovsky, Alexandr D.; Sokolovsky, Alexandr E.; and Kirilchik, Alexandr I., 4,279,865, Cl. 422-187.000.

Kirk, Richard L.: *See—*
Crossman, Richard L.; and Kirk, Richard L., 4,279,333, Cl. 188-218.0XL.

Kirkbride, Chalmer G. Use of microwaves in petroleum refinery operations. 4,279,722, Cl. 204-162.00R.

Kirkpatrick, Joel L.: *See—*
Hoffmann, Otto L.; and Kirkpatrick, Joel L., 4,279,636, Cl. 71-90.000.

Kitano, Kyozo: *See—*
Sekiguchi, Shizuo; Tano, Tetsuo; and Kitano, Kyozo, 4,279,786, Cl. 252-536.000.

Kleiber, Robert A.: *See—*
Harper, Robert W.; and Kleiber, Robert A., 4,279,348, Cl. 212-196.000.

Kleinwaks, Jeffrey M., to Singer Company, The. Electronic compensator for a pneumatic servo controlled load bearing bellows system. 4,279,192, Cl. 91-361.000.

Klemann, Lawrence P.; and Newman, Gerald H., to Exxon Research & Engineering Co. Pseudohalide-containing salts for electrolytes of alkali-metal electrochemical devices. 4,279,976, Cl. 429-197.000.

Klimenko, Valery S.: *See—*
Zverev, Anatoly I.; Astakhov, Evgeny A.; Klimenko, Valery S.; Skadin, Vasily G.; and Timoshin, Mikhail A., 4,279,383, Cl. 239-61.000.

Klimezky, Frank. Molded baseball glove and the method of making. 4,279,681, Cl. 156-245.000.

Klinger, William J.: *See—*
Hafer, Edward H.; and Klinger, William J., 4,280,217, Cl. 370-63.000.

Klose, Sigmar: *See—*
Hagen, Alexander; Edelmann, Hermann; and Klose, Sigmar, 4,279,991, Cl. 435-4.000.

Knapp, Carl L., to Bendix Corporation, The. Releasing electrical connector. 4,279,458, Cl. 339-45.00M.

Knapp, Randolph H.; Lawson, Jimmie B.; Reisberg, Joseph; Thigpen, David R.; and Hill, Harold J., to Shell Oil Company. Process for stimulating a well with a saline surfactant sulfate, alkanol and acid system. 4,279,305, Cl. 166-307.000.

Knipp, Ulrich: *See—*
Vente, Paul; Seidenschnur, Dieter; Knipp, Ulrich; and Spenner, Anton, 4,279,856, Cl. 264-313.000.

Knippenberg, Wilhelmus F.: *See—*
Werner, Helmut W. W.; Witmer, Antonius W.; and Knippenberg, Wilhelmus F., 4,280,049, Cl. 250-310.000.

Knox, Lloyd C.; and Nickles, Robert B., Jr., to Halliburton Company. Sleeve valve. 4,279,266, Cl. 137-68.00R.

Kobayashi, Haruo, to Minolta Camera Kabushiki Kaisha. Camera structure. 4,279,493, Cl. 354-197.000.

Kobayashi, Kazutsugu: *See—*
Gotou, Makoto; Kobayashi, Kazutsugu; and Okumura, Kenichiro, 4,280,072, Cl. 310-67.00R.

Kobayashi, Yoshiaki: *See—*
Ezaki, Akira; Kobayashi, Yoshiaki; and Hayashi, Sigeaki, 4,280,034, Cl. 235-1.00D.

Kobe, Inc.: *See—*
Erickson, John W., 4,279,571, Cl. 415-89.000.

Kobylarz, Lawrence P.: *See—*
Siwik, Henry A.; and Kobylarz, Lawrence P., 4,279,413, Cl. 271-274.000.

Kochi, Hiromu: *See—*
Takaya, Takao; Masugi, Takashi; Takasugi, Hisashi; and Kochi, Hiromu, 4,279,818, Cl. 424-246.000.

Kochuev, Evgeny S.: *See—*
Gladush, Vasily M.; Eremenko, Nena G.; Markina, Ljudmila V.; Kochuev, Evgeny S.; Krainik, Mikhail P.; Cherkasova, Evgenia E.; and Lyashenko, Nikolai M., 4,279,963, Cl. 428-433.000.

Kodama, Fumio; and Ohyama, Noboru, to Kureha Kagaku Kogyo Kabushiki Kaisha. Multilayer insulating material and process for production thereof. 4,279,952, Cl. 428-36.000.

Koenig & Bauer Aktiengesellschaft: *See—*
Bolza-Schunemann, Hans B., 4,279,410, Cl. 270-6.000.

Koenig, Horst: *See—*
Schoellkopf, Ulrich; Hausberg, Hans-Heinrich; Boell, Walter; May, Hans-Joachim; and Koenig, Horst, 4,280,008, Cl. 548-301.000.

Kohl, Walter: *See—*
Kuhn, Edgar; Kohl, Walter; and Schramm, Gunter, 4,280,161, Cl. 361-18.000.

Kohler, Peter: *See—*
Lassmann, Eberhard; Kohler, Peter; Beran, Franz; and Gerhards, Hans J., 4,279,872, Cl. 423-228.000.

Kohlmann, Wilhelm: *See—*
Gutsche, Klaus; Scharwaechter, Peter; Kohlmann, Wilhelm; and Kroemer, Gerd, 4,279,899, Cl. 424-229.000.

Kohyama, Susumu, to Tokyo Shibaura Denki Electric Co., Ltd. Semiconductor charge transfer device having a decoupling gate for stopping reverse charge flow. 4,280,067, Cl. 307-221.00D.

Koichi, Yasushi: *See—*
Eda, Tadahiro; Tatsumi, Susumu; Imai, Chikara; and Koichi, Yasushi, 4,279,498, Cl. 355-14.00D.

Koike, Tadao: *See—*
Kojima, Kenji; Ota, Sakae; Katsumata, Akio; Kameyama, Toshiaki; Watanabe, Toshio; and Koike, Tadao, 4,279,501, Cl. 355-15.000.

Koiso, Kazuhiro; Sanda, Masaaki; Hayashi, Mamoru; and Uesugi, Hiroaki, to Matsushita Electric Industrial Co., Ltd. Cabinet with foldable sliding doors. 4,279,454, Cl. 312-297.000.

Kojima, Kenji; Ota, Sakae; Katsumata, Akio; Kameyama, Toshiaki; Watanabe, Toshio; and Koike, Tadao, to Ricoh Company, Ltd. Cleaning device for photoelectrostatic copying apparatus. 4,279,501, Cl. 355-15.000.

Kokura, Satoshi: *See—*
Ashida, Eiji; Nihei, Masayasu; Wachi, Hiroshi; Sato, Akira; and Kokura, Satoshi, 4,280,137, Cl. 358-101.000.

Kolarik, Luis O.: *See—*
Weiss, Donald E.; Kolarik, Luis O.; Priestley, Anthony J.; and Anderson, Nevil J., 4,279,756, Cl. 210-667.000.

Kolesov, Jury A.: *See—*
Pospelov, Boris S.; Bendersky, Alexandr F.; Kolesov, Jury A.; Nefediev, Yakov N.; Levkovich, Mikhail I.; and Asinovsky, Eduard N., 4,280,165, Cl. 361-236.000.

Kollmorgen Corporation: *See—*
Bulpitt, Thomas H., 4,279,507, Cl. 356-225.000.

Kolotilov, Nikolai N.: *See—*
Buryakov, Valery M.; Kolotilov, Nikolai N.; Tokhunts, Roman D.; Yakovlev, Vladimir S.; Akulov, Vladislav A.; Zabotin, Viktor G.; Levin, Viktor Y.; Lukachev, Viktor P.; Pervyshin, Alexandr N.; Zaitsev, Konstantin A.; Karakov, Vladimir D.; and Khasanov, Mubaraksha D., 4,279,405, Cl. 266-55.000.

Komatsu, Shigeru, to Tokyo Shibaura Denki Kabushiki Kaisha. Method for manufacturing a semiconductor device utilizing dopant predeposition and polycrystalline deposition. 4,279,671, Cl. 148-188.000.

Kompelien, Arlon D., to Honeywell Inc. Field effect transistor device means control system. 4,280,069, Cl. 307-571.000.

Kondo, Hideyo; and Murai, Keiichi, to Canon Kabushiki Kaisha. Electrophotographic apparatus and an abrading means. 4,279,500, Cl. 355-15.000.

Kondo, Shiro; and Takii, Yasuo, to Alps Electric Co., Ltd. Illuminating type push-button switch device. 4,280,031, Cl. 200-314.000.

Konishiroku Photo Industry Co., Ltd.: *See—*
Ogi, Keiji; Sasaki, Takashi; and Tosaka, Yasuo, 4,279,987, Cl. 430-409.000.

Konrad, Eugen; and Mager, Herbert, to Wella Aktiengesellschaft. Method and composition for hair coloring. 4,279,613, Cl. 8-407.000.

Kooi B.V.: *See—*
Kooi, Hessel; and de Vries, Hendrik, 4,279,604, Cl. 414-667.000.

Kooi, Hessel; and de Vries, Hendrik, to Kooi B.V.; and de Vries, Hendrik. Fork truck. 4,279,604, Cl. 414-667.000.

Koppelmann, Roger F., to Bendix Corporation, The. Digital homodyne processing system. 4,280,202, Cl. 367-87.000.

Korf-Stahl AG: *See—*
Elsner, Emil, 4,279,407, Cl. 266-193.000.

Korotkov, Albert N.: *See—*
Medovar, Boris I.; Baglai, Vitaly M.; Us, Vasily I.; Bogachenko, Alexei G.; Timashov, Grigory A.; Fedorovsky, Boris B.; Bondarenko, Oleg P.; Shtanko, Jury P.; Artamonov, Viktor L.; Pavlov, Leonid V.; Eltsov, Konstantin S.; Stetsenko, Nikolai V.; Kaganovsky, Gary P.; Korotkov, Albert N.; and Popov, Sergei S., 4,279,642, Cl. 75-10.00C.

Korpela, Heikki: *See—*
Assarsson, Alf G.; and Korpela, Heikki, 4,279,847, Cl. 264-51.000.

Kosak, Wolodymyr: *See—*
Braun, Peter D.; and Kosak, Wolodymyr, 4,279,669, Cl. 148-175.000.

Kosaka, Shohei: *See—*
Satoh, Hitoshi; and Kosaka, Shohei, 4,279,712, Cl. 204-128.000.

Koshida, Daikichi; Sugisawa, Ko; Kimura, Takashi; and Nakajima, Setsuo, to House Food Industrial Company Limited. Edible laminar sheet material and method of preparation. 4,279,932, Cl. 426-89.000.

Kostelitz, Michel: *See—*
Berger, Jean-Yves; Kostelitz, Michel; Reynaud, Bernard; and Egee, Raymond, 4,280,042, Cl. 219-121.0PT.
Bourhis, Yves; Wermelinger, Alain; and Kostelitz, Michel, 4,279,406, Cl. 266-81.000.

Kosugi, Masahide: *See—*
Mikami, Teigo; Miyano, Hiroaki; and Kosugi, Masahide, 4,279,290, Cl. 164-154.000.

Koump, Valentin, to Westinghouse Electric Corp. High temperature heat exchanger having porous tube sheet portions. 4,279,293, Cl. 165-82.000.

Kowalski, Daniel J., to Four Star Corporation. Stanchion assembly. 4,279,368, Cl. 224-326.000.

Kozak, Peter P., Jr.; and Gallup, Janet M., to Cummins, Kozak and Gillman; and Gallup, Janet, part interest to each. Method for obtaining mold spore material. 4,280,000, Cl. 435-242.000.

Kozek, Edward P., to IMS Ltd. Fail-safe relay system. 4,280,164, Cl. 361-179.000.

Kozima, Akio: *See—*
Ohta, Masafumi; Sakai, Kiyoshi; Hashimoto, Mitsuru; Kozima, Akio; and Sasaki, Masaomi, 4,279,981, Cl. 430-73.000.

Krainik, Mikhail P.: *See*—
Gladush, Vasily M.; Eremenko, Nena G.; Markina, Ljudmila V.; Kochuev, Evgeny S.; Krainik, Mikhail P.; Cherkasova, Evgenia E.; and Lyashenko, Nikolai M., 4,279,963, Cl. 428-433.000.
Kramer, Morton; and Wambach, Allen D., to General Electric Company. Thermoplastic molding compositions of a linear polyester and a poly(ester urethane). 4,279,801, Cl. 260-40.00R.
Krebs, Fred G.; and Abbott, Daniel B., to Burroughs Corporation. Backlash free adjusting mechanism. 4,279,173, Cl. 74-441.000.
Kreiling, Ronald L.: *See*—
Nielson, Niel E.; Kreiling, Ronald L.; Hill, Robert C.; and Nice, Ralph A., 4,279,753, Cl. 210-605.000.
Kreimer, July K.; and Ageeva, Ljubov S. Vaccine against Newcastle fowl disease, method for preparing and use thereof. 4,279,893, Cl. 424-89.000.
Kress, Dieter; and Haberle, Friedrich, to MAPAL Fabrik fur Prazisionswerkzeuge Dr. Kress KG. Deep hole boring tool with replaceable blade. 4,279,550, Cl. 408-59.000.
Krieter, George-Heinz: *See*—
Czech, Franz; and Krieter, George-Heinz, 4,280,015, Cl. 174-28.000.
Krings, Frederick C.: *See*—
Kure-Jensen, Jens; Gordon, Richard S.; Devlin, Charles L.; and Krings, Frederick C., 4,280,060, Cl. 290-40.00R.
Krob, Erwin; and Szasz, Tibor, to TMC Corporation. Ski brake. 4,279,432, Cl. 280-605.000.
Kroemer, Gerhard: *See*—
Gutsche, Klaus; Scharwaechter, Peter; Kohlmann, Wilhelm; and Kroemer, Gerd, 4,279,899, Cl. 424-229.000.
Krofchak, David. Process for treating phosphatic clay suspensions. 4,279,635, Cl. 71-4.00Z.
Krogsrud, Jens C. Lamp. 4,280,172, Cl. 362-269.000.
Krohn, Wolfgang: *See*—
Meisert, Ernst; Bohne, Franz-Josef; Brecht, Klaus; Mormann, Werner; Krohn, Wolfgang; and Henes, Gerhard, 4,280,007, Cl. 521-159.000.
Krone GmbH: *See*—
Forberg, Horst, 4,279,460, Cl. 339-97.00P.
Kruger, Friedrich; and Michel, Walter, to Joh. A. Benckiser GmbH. Process for inhibiting the formation of mineral deposits from a water using N-N-dialkylureidomethane diphosphonic acids. 4,279,758, Cl. 210-700.000.
Krupa, Andrew S.: *See*—
Velenyi, Louis J.; and Krupa, Andrew S., 4,279,777, Cl. 252-439.000.
Kubbeler, Hans-Klaus: *See*—
Erpenbach, Heinz; Gehrmann, Klaus; Kubbeler, Hans-Klaus; and Lork, Winfried, 4,280,010, Cl. 560-205.000.
Kubo, Masaharu: *See*—
Minato, Osamu; Masuhara, Toshiaki; Sasaki, Toshio; and Kubo, Masaharu, 4,280,065, Cl. 307-473.000.
Kubota Ltd.: *See*—
Ohta, Ryozo; Yoshizawa, Tadao; Sakaguchi, Masayuki; Hara, Yoshiaki; Kyomen, Junsuke; Yoneda, Ryuichi; and Enomoto, Hidekazu, 4,279,853, Cl. 264-230.000.
Kudla, Ronald M., to American Cyanamid Company. Topical ointment. 4,279,901, Cl. 424-241.000.
Kuhn, Edgar; Kohl, Walter; and Schramm, Gunter, to Robert Bosch GmbH. Over-voltage protected, self-contained mobile electrical network system, particularly for automotive applications. 4,280,161, Cl. 361-18.000.
Kuhn, Rolf, to GG. Noell GmbH. Combined gripper for a nuclear reactor. 4,279,699, Cl. 176-30.000.
Kuhnlein, Hans; and Jarosch, Walter J., to Hch. Bertrams Aktiengesellschaft. Process for purifying polluted fluids. 4,279,693, Cl. 159-47.0WL.
Kukanskis, Peter E.; Grunwald, John J.; Ferrier, Donald R.; and Sawoska, David A., to MacDermid Incorporated. Electroless copper deposition solution using a hypophosphite reducing agent. 4,279,948, Cl. 427-305.000.
Kukurba, Walter. Automatic feeding device. 4,279,220, Cl. 119-51.110.
Kulesza, Ralph J.; Alcock, James M.; and Meyer, Burton C., to Marvin Glass & Associates. Toy airplane. 4,279,098, Cl. 46-101.000.
Kumura, Masao: *See*—
Hayakawa, Masao; Maeda, Takamichi; and Kumura, Masao, 4,280,132, Cl. 357-70.000.
Kunderman, Fred K., to Dresser Industries, Inc. Energy recovery system. 4,279,574, Cl. 417-243.000.
Kunii, Shusaku; and Hirano, Hitoshi. Wrist watch. 4,280,214, Cl. 368-282.000.
Kuraray Co., Ltd.: *See*—
Sueoka, Akinori; Okamoto, Takehiko; Ohmori, Akio; Kawai, Syuji; and Ueda, Minoru, 4,279,752, Cl. 210-500.200.
Yamashita, Shuzo; Shibatani, Kyoichiro; Takakura, Kiochi; and Imai, Kiyokazu, 4,279,795, Cl. 260-29.6RW.
Kurata, Kazuhiro: *See*—
Ono, Yuichi; Ito, Kazuhiro; Mori, Mitsuhiro; Aoki, Masaaki; and Kurata, Kazuhiro, 4,280,131, Cl. 357-17.000.
Kure-Jensen, Jens; Gordon, Richard S.; Devlin, Charles L.; and Krings, Frederick C., to General Electric Company. Dedicated microcomputer-based control system for steam turbine-generators. 4,280,060, Cl. 290-40.00R.
Kureha Kagaku Kogyo Kabushiki Kaisha: *See*—
Kodama, Fumio; and Ohyama, Noboru, 4,279,952, Cl. 428-36.000.
Kurz, Wilfried; and Glardon, Remi, to Les Fabriques d'Assortiments Reunies-Div. R. Directionally solidified ductile magnetic alloy. 4,279,668, Cl. 148-101.000.
Kutney, James P., to United States of America, Health & Human Services. Method for producing dimer alkaloids. 4,279,817, Cl. 260-244.400.
Kwasnoski, Daniel; Sterner, Charles J.; Horst, Russel J.; and Burcaw, Kenneth R., to Bethlehem Steel Corporation. Apparatus for the distillation of weak ammonia liquor. 4,279,703, Cl. 202-158.000.
Kyomen, Junsuke: *See*—
Ohta, Ryozo; Yoshizawa, Tadao; Sakaguchi, Masayuki; Hara, Yoshiaki; Kyomen, Junsuke; Yoneda, Ryuichi; and Enomoto, Hidekazu, 4,279,853, Cl. 264-230.000.
L. Schuler GmbH: *See*—
Schneider, Franz; Schumann, Burkhard; Maier, Karl; and Hohn, Herbert, 4,279,561, Cl. 414-591.000.
La Soudure Autogene Francaise: *See*—
Berger, Jean-Yves; Kostelitz, Michel; Reynaud, Bernard; and Egee, Raymond, 4,280,042, Cl. 219-121.0PT.
Laar, Erwin; and Sperber, Werner, to AGFA-Gevaert, A.G. Arrangement for transporting strip-shaped material. 4,279,371, Cl. 226-91.000.
Labombarde, Raymond A.; and Tremblay, Robert A. Apparatus and method for folding blanks with an unusually elongated wall. 4,279,611, Cl. 493-418.000.
Labora Mannheim GmbH fur Labortechnik: *See*—
Blumel, Reinhard; Denker, Jurgen; Markart, Ernst; Trapp, Werner; Tutzer, Michael; and Woznik, Reinhard, 4,279,514, Cl. 356-445.000.
Lacoste, Francois R., to Patentex S.A. Rackets for tennis and other games. 4,279,418, Cl. 273-73.00D.
Ladek Corporation: *See*—
Lambert, Roland, 4,279,291, Cl. 165-1.000.
Laely, Andreas; Zwahlen, Gunther; and Buxbaum, Lothar, to Ciba-Geigy Corporation. Method for the production of a pigment preparation for coloring linear polyesters in the melt. 4,279,802, Cl. 260-40.00P.
LaFleur, Arthur E., to Custom Packaging Systems. Rotary heat cutter for plastic webs. 4,279,183, Cl. 83-16.000.
Laine, Norman R.: *See*—
Sanchez, Moises G.; Ernest, Michael V.; and Laine, Norman R., 4,279,779, Cl. 252-448.000.
L'Air Liquide, Scoiete Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude: *See*—
Feix, Jacques; and Cardot, Frederic, 4,280,043, Cl. 219-137.310.
L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude: *See*—
Berger, Jean-Yves; Kostelitz, Michel; Reynaud, Bernard; and Egee, Raymond, 4,280,042, Cl. 219-121.0PT.
Guillaume, Paul; Karinthi, Pierre; and Nicolas, Jacques, 4,279,208, Cl. 110-346.000.
L'Air Liquide, Societe Anonyme pour l'Etude et l'Expolitation des procedes Georges Claude: *See*—
Bourhis, Yves; Wermelinger, Alain; and Kostelitz, Michel, 4,279,406, Cl. 266-81.000.
Lamarche, Paul E., to Borg-Warner Corporation. Vibration damper assembly. 4,279,132, Cl. 64-27.00C.
Lambert, Roland, to Ladek Corporation. Subterranean heating and cooling system. 4,279,291, Cl. 165-1.000.
Lambuth, Alan L., to Boise Cascade Corporation. Aqueous polyisocyanate-lignin adhesive. 4,279,788, Cl. 260-9.000.
Lampredi, Aurelio; Leoni, Aldo; and Ioli, Luigi, to Fiat Auto S.p.A. Hydraulic tappet for an internal combustion engine having an overhead camshaft. 4,279,226, Cl. 123-90.550.
Lamy, Jean: *See*—
Bauer, Philippe; Lamy, Jean; and Martel, Bernard, 4,279,230, Cl. 123-440.000.
Land Pyrometers Limited: *See*—
Land, Thomas, 4,279,150, Cl. 73-338.000.
Land, Thomas, to Land Pyrometers Limited. Apparatus for determining vapor content of a gas/vapor mixture. 4,279,150, Cl. 73-338.000.
Lande, Harald; and Johannessen, Leif, to Norsk Hydro a.s. Profile system. 4,279,529, Cl. 403-246.000.
Landers, Don B., to Oil States Rubber Company. Grout seal premature inflation protective system. 4,279,546, Cl. 405-225.000.
Landsness, Clifford A., to B. F. Goodrich Company, The. Tire building machine. 4,279,683, Cl. 156-397.000.
Lang, Gusztav, to Hilti Aktiengesellschaft. Two-component adhesive cartridge. 4,279,340, Cl. 206-219.000.
Lanier, George G. Adjustable frame apparatus. 4,279,288, Cl. 160-374.000.
Lantzsch, Reinhard: *See*—
Fuchs, Rainer; Naumann, Klaus; Lantzsch, Reinhard; Hagemann, Hermann; Hammann, Ingeborg; Homeyer, Bernhard; Behrenz, Wolfgang; and Stendel, Wilhelm, 4,279,923, Cl. 424-304.000.
Laporte Industries Limited: *See*—
Robinson, Michael, 4,279,640, Cl. 75-1.00R.
Lardellier, Alain M. J.: *See*—
Kervistin, Robert; and Lardellier, Alain M. J., 4,279,153, Cl. 73-357.000.
LaRochelle, Ronald W.: *See*—
Eckberg, Richard P.; and LaRochelle, Ronald W., 4,279,717, Cl. 204-159.130.
Larock, Richard C., to Iowa State University Research Foundation, Inc. Thallation carbonylation of arenes. 4,279,823, Cl. 260-343.210.

Larsen, Donn E.: *See—*
Chun, Randall K. B.; and Larsen, Donn E., 4,280,221, Cl. 375-17.000.

Larson, Norman L.: *See—*
Bay, Marvon; and Larson, Norman L., 4,279,420, Cl. 273-187.00A.

Larsson, Frank, to Hafa Fabriks AB. Attachment for wall cabinets, mirrors, shelves and similar articles. 4,279,397, Cl. 248-221.300.

Lash, Donald W. Dispenser for rolled sheet material. 4,279,370, Cl. 225-67.000.

Laskaris, Evangelos T., to General Electric Company. Epoxy impregnated ventilated winding. 4,279,944, Cl. 427-62.000.

Lassmann, Eberhard; Kohler, Peter; Beran, Franz; and Gerhards, Hans J., to Linde Aktiengesellschaft. Method of scrubbing acid gases from gas mixtures. 4,279,872, Cl. 423-228.000.

Lavoie, Gilbert V. Bag opening apparatus. 4,279,558, Cl. 414-412.000.

Law, Andrew B.: *See—*
Lewis, Sheldon N.; Miller, George A.; and Law, Andrew B., 4,279,762, Cl. 252-47.500.

Lawrence, Randall K.; and Stevens, Aaron A., to Murray Ohio Manufacturing Co., The. Combined clutch and brake arrangement for a rotary lawnmower blade. 4,279,117, Cl. 56-11.300.

Lawson, Jimmie B.: *See—*
Knapp, Randolph H.; Lawson, Jimmie B.; Reisberg, Joseph; Thigpen, David R.; and Hill, Harold J., 4,279,305, Cl. 166-307.000.

Lawson-Tancred, Henry, to Sir Henry Lawson-Tancred, Sons & Co. Ltd. Method and apparatus for generating electricity from a fixed pitch wind wheel. 4,280,061, Cl. 290-55.000.

Lazarus, Arnold; and Weiss, Stuart L., to Strobotronix, Inc. Integrated piezoelectric sound transducer and preamplifier. 4,280,018, Cl. 179-1.00M.

Leake, William R.: *See—*
Shaver, Robert G.; and Leake, William R., 4,279,702, Cl. 202-137.000.

l'Ecluse, Henriette C. Jansz-de, heir: *See—*
Jansz, Joost W., deceased, 4,279,313, Cl. 173-112.000.

Lee, Charles A.: *See—*
Gagliardi, Joseph; and Lee, Charles A., 4,279,535, Cl. 405-15.000.

Lee, Chi-long: *See—*
Homan, Gary R.; and Lee, Chi-long, 4,279,792, Cl. 260-18.00S.

Lee, Denis C.; and Rathjen, Arthur H., to Dow Corning Corporation. Mammometer. 4,279,259, Cl. 128-774.000.

Lee, Henry E.; Guillen, Francisco J.; and Longuemare, R. Noel, Jr., to Westinghouse Electric Corp. Range swath coverage method for synthetic aperture radar. 4,280,127, Cl. 343-5.0CM.

Lee, Jack W.: *See—*
Ryan, Edward J.; Rutz, David A.; and Lee, Jack W., 4,279,121, Cl. 57-258.000.

Lee, John S.: *See—*
Kim, Tong S.; and Lee, John S., 4,279,578, Cl. 418-97.000.

Lee, Yong N., to Borg-Warner Corporation. Heat exchanger with condensate blow-off suppressor. 4,279,298, Cl. 165-181.000.

Leek, Adrian E.: *See—*
Masson, Pierre L.; Cambiaso, Cesar L.; De Steenwinkel, Floris; and Leek, Adrian E., 4,279,617, Cl. 23-230.00B.

Leiter, Gordon A.; and Schall, Herman H., to General Electric Company. High current mechanism having flexible contact arm. 4,280,030, Cl. 200-237.000.

Leleu, Jean-Bernard: *See—*
Verwaerde, Francoise; Leleu, Jean-Bernard; and Huchette, Michel, 4,279,931, Cl. 426-48.000.

Lemaire, Henri: *See—*
Boeuf, Jean-Marie; Gerest, Pierre; and Lemaire, Henri, 4,279,763, Cl. 252-62.580.

Lenchin, Julianne M.: *See—*
Wurzburg, Otto B.; and Lenchin, Julianne M., 4,279,940, Cl. 426-590.000.

Leneveu, Louis J. J.; and Treneules, Didier J., to Societe Nationale des Poudres et Explosifs. Fragmentable propellant containing polyvinyl nitrate binder. 4,279,672, Cl. 149-19.800.

Leniger, David J., to Edwards, Alfred R.; and Price, Gene R. Heat pump swimming pool heater. 4,279,128, Cl. 62-238.600.

Lenne, William: *See—*
Bettiol, Bruno; Harsigny, Christian; and Lenne, William, 4,279,480, Cl. 351-159.000.

Leonard, Charles A.: *See—*
Cale, Albert D., Jr.; and Leonard, Charles A., 4,279,822, Cl. 260-326.470.

Leoni, Aldo: *See—*
Lampredi, Aurelio; Leoni, Aldo; and Ioli, Luigi, 4,279,226, Cl. 123-90.550.

Leray, Jean: *See—*
Vert, Michel; Chabot, Francois; Leray, Jean; and Christel, Pascal, 4,279,249, Cl. 128-92.00D.

Leroux, Frank W. Modular hydroponic system. 4,279,101, Cl. 47-64.000.

Les Fabriques d'Assortiments Reunies-Div. R: *See—*
Kurz, Wilfried; and Glardon, Remi, 4,279,668, Cl. 148-101.000.

Leussink, Reinhard: *See—*
Jesse, Erich; and Leussink, Reinhard, 4,280,166, Cl. 361-253.000.

Leuthold, Oskar, to Ebauches Electroniques SA. Alternating to direct voltage converter. 4,280,175, Cl. 363-127.000.

Leutz, Donald C., to Parker-Hannifin Corporation. Hydraulic fluid filter and bypass valve. 4,279,746, Cl. 210-130.000.

Levasseur, Joseph L., to H. R. Electronics Company. Cash accountability control circuit for vending and like machines. 4,280,181, Cl. 364-464.000.

Levin, Alan, to ACF Industries, Incorporated. Guide arrangement for expanding gate valves. 4,279,404, Cl. 251-167.000.

Levin, Viktor Y.: *See—*
Buryakov, Valery M.; Kolotilov, Nikolai N.; Tokhunts, Roman D.; Yakovlev, Vladimir S.; Akulov, Vladislav A.; Zabotin, Viktor G.; Levin, Viktor Y.; Lukachev, Viktor P.; Pervyshin, Alexandr N.; Zaitsev, Konstantin A.; Karakov, Vladimir D.; and Khasanov, Mubaraksha D., 4,279,405, Cl. 266-55.000.

Levinson, Melvin L. Egg cooking in a microwave oven. 4,280,032, Cl. 219-10.55E.

Levkovich, Mikhail I.: *See—*
Pospelov, Boris S.; Bendersky, Alexandr F.; Kolesov, Jury A.; Nefediev, Yakov N.; Levkovich, Mikhail I.; and Asinovsky, Eduard N., 4,280,165, Cl. 361-236.000.

Levy, Robert M.; and Matire, P. Jeffrey, to Sam's Well Service, Inc. Rod wrenching table. 4,279,600, Cl. 434-219.000.

Lewis, Harry R., Jr., to Standard Oil Company (Indiana). Subsea well flow lines tie-in using conductors. 4,279,542, Cl. 405-169.000.

Lewis, J. Stephen: *See—*
Dyer, Robert F.; Lewis, J. Stephen; Rosenthal, Janice E.; Mills-Winkler, James P.; and Schroeder, Robert F., 4,279,099, Cl. 46-119.000.

Lewis, John W., to Dow Chemical Company, The. Electrical switch. 4,280,029, Cl. 200-50.00R.

Lewis, Roger N.: *See—*
Halle, Reidar; Peterson, David; and Lewis, Roger N., 4,279,831, Cl. 260-453.0RZ.

Lewis, Sheldon N.; Miller, George A.; and Law, Andrew B., to Rohm and Haas Company. Cutting oils containing 3-isothiazolones as biocides. 4,279,762, Cl. 252-47.500.

LGZ Landis & Gyr Zug AG: *See—*
Schmidhauser, Rolf, 4,280,037, Cl. 235-454.000.

Licentia Patent-Verwaltungs-G.m.b.H.: *See—*
Braun, Peter D.; and Kosak, Wolodymyr, 4,279,669, Cl. 148-175.000.

Lightel, William J.: *See—*
Callender, Robert E.; Doyle, Loren C.; and Lightel, William J., 4,280,050, Cl. 250-330.000.

Lin, Tz-Hong: *See—*
Baldwin, Ronald M.; Lin, Tz-Hong; and Winchell, Harry S., 4,279,887, Cl. 424-1.500.

Lindab Platisol AB: *See—*
Bruhn, Peter E.; and Jensen, Finn U. H., 4,279,541, Cl. 405-119.000.

Lindberg, Allen W.; Gantzert, Thomas R.; and Hicks, Donald L., to ACF Industries, Incorporated. Apparatus for controlling the air-fuel ratio in an internal combustion engine. 4,279,231, Cl. 123-489.000.

Lindberg, Charles R., to Silicon General, Inc. Temperature compensated bipolar reference voltage circuit. 4,280,090, Cl. 323-315.000.

Lindblad, Nero R.: *See—*
Rezanka, Ivan; and Lindblad, Nero R., 4,279,499, Cl. 355-15.000.

Linde Aktiengesellschaft: *See—*
Lassmann, Eberhard; Kohler, Peter; Beran, Franz; and Gerhards, Hans J., 4,279,872, Cl. 423-228.000.
Skolaude, Werner, 4,279,631, Cl. 62-29.000.

Lindemann Maschinenfabrik GmbH: *See—*
Stodt, Eberhard; and Kaldenbach, Erwin, 4,279,557, Cl. 414-400.000.

Lindsay, Gene K.; and O'Beirne, Andrew J., to Dynasciences Corporation. Method of removing lipid inhibitors from limulus amebocyte lysate. 4,279,774, Cl. 252-408.000.

Lion Corporation: *See—*
Suganuma, Nobuo; Uematsu, Michio; Mandai, Hiroshi; Horiguchi, Yasunobu; and Masamizu, Koji, 4,279,888, Cl. 424-49.000.

Lion Fat & Oil Co., Ltd., The: *See—*
Sekiguchi, Shizuo; Tano, Tetsuo; and Kitano, Kyozo, 4,279,786, Cl. 252-536.000.

Little, John L.: *See—*
Hough, William V.; Little, John L.; and Warheit, Kevin E., 4,279,951, Cl. 427-437.000.

Little, Robert T. Combination sun-moon filter. 4,279,463, Cl. 350-17.000.

Litton Business Systems, Inc.: *See—*
Johnston, John N., 4,279,525, Cl. 400-656.000.

Liu, Yi-Tsung: *See—*
Ganguly, Ashit K.; and Liu, Yi-Tsung, 4,279,896, Cl. 424-180.000.

Livigni, Russell A.: *See—*
Aggarwal, Sundar L.; Hargis, Ivan G.; and Livigni, Russell A., 4,279,798, Cl. 260-33.40R.

Lobo, Mark A.; and Pembroke, Richard W., to Telex Computer Products, Inc. Compact pneumatic reel latch. 4,279,386, Cl. 242-68.300.

Lohrbach, Mervin; and Peeples, Dick E., to Champion International Corporation. Carton with self-locking end closure and blank for forming same. 4,279,379, Cl. 229-39.00R.

Lohrbach, Mervin: *See—*
Peeples, Dick E.; and Lohrbach, Mervin, 4,279,377, Cl. 229-39.00R.

Longoni, Angelo: *See—*
Gozzo, Franco; Abbruzzese, Luigi; and Longoni, Angelo, 4,279,927, Cl. 424-322.000.

Longoni, Sergio: *See—*
Portinari, Antonio; and Longoni, Sergio, 4,279,470, Cl. 350-96.230.

Longsworth, Ralph C., to Air Products and Chemicals, Inc. Removable refrigerator for maintaining liquefied gas inventory. 4,279,127, Cl. 62-77.000.

Longuemare, R. Noel, Jr.: *See—*
Lee, Henry E.; Guillen, Francisco J.; and Longuemare, R. Noel, Jr., 4,280,127, Cl. 343-5.0CM.

Lookhof, Wolfgang: *See*—
Kiessling, Werner; and Lookhof, Wolfgang, 4,280,041, Cl. 219-121.0PT.
Lord, Herbert A.; and Schneider, Randy G., to Western Electric Company, Inc. Method and apparatus for extruding tubular jackets. 4,279,851, Cl. 264-174.000.
Lord, Tom J.; and Snyder, William V., to PPG Industries, Inc. Apparatus for installing rolls on a conveyor shaft. 4,279,071, Cl. 29-717.000.
Lork, Winfried: *See*—
Erpenbach, Heinz; Gehrmann, Klaus; Kubbeler, Hans-Klaus; and Lork, Winfried, 4,280,010, Cl. 560-205.000.
Louderback, Allan L.; and Szatkowski, Paul R. Blood gas control. 4,279,775, Cl. 252-408.000.
Lovelace, James: *See*—
Aigner, Robert; and Lovelace, James, 4,279,349, Cl. 215-6.000.
Low, William H.; Hetrick, Vernon L.; and McCoy, Paul, to Meyer Products, Inc. Snowplow blade lift mount assembly. 4,279,084, Cl. 37-42.00R.
Lowenschuss, Oscar; and Gordon, Bruce E., to Raytheon Company. Digital memory system. 4,280,219, Cl. 375-4.000.
Loy, John W. Swallowtail kite. 4,279,394, Cl. 244-153.00R.
Lucas, James H.: *See*—
Plate, John R.; and Lucas, James H., 4,279,334, Cl. 192-3.570.
Lueddecke, Donald E.; Mottine, John J., Jr.; and Vesperman, William C., to Western Electric Company, Inc.; and Bell Telephone Laboratories, Inc. Acrylic copolymeric coating composition. 4,279,789, Cl. 260-17.00R.
Lukachev, Viktor P.: *See*—
Buryakov, Valery M.; Kolotilov, Nikolai N.; Tokhunts, Roman D.; Yakovlev, Vladimir S.; Akulov, Vladislav A.; Zabotin, Viktor G.; Levin, Viktor Y.; Lukachev, Viktor P.; Pervyshin, Alexandr N.; Zaitsev, Konstantin A.; Karakov, Vladimir D.; and Khasanov, Mubaraksha D., 4,279,405, Cl. 266-55.000.
Lundberg, Hans G., to Marinkonsult Hans Lundberg AB. Assembly for treating vessel hulls. 4,279,212, Cl. 114-222.000.
Lupertz, Hans-Henning, to ITT Industries, Inc. Floating-caliper disc brake. 4,279,331, Cl. 188-73.300.
Lyakhevich, Genrikh D.; Belkevich, Petr I.; Rudkovsky, Alexandr D.; Sokolovsky, Alexandr E.; and Kirilchik, Alexandr I. Organic compound oxidation plant. 4,279,865, Cl. 422-187.000.
Lyashenko, Nikolai M.: *See*—
Gladush, Vasily M.; Eremenko, Nena G.; Markina, Ljudmila V.; Kochuev, Evgeny S.; Krainik, Mikhail P.; Cherkasova, Evgenia E.; and Lyashenko, Nikolai M., 4,279,963, Cl. 428-433.000.
Lymburner, Frank M.: *See*—
Peterson, Charles M.; and Lymburner, Frank M., 4,279,533, Cl. 404-68.000.
Lynch, Paul E. Drill pipe tool joint protector. 4,279,850, Cl. 264-135.000.
M&T Chemicals Inc.: *See*—
Dworkin, Robert D., 4,279,807, Cl. 260-45.75B.
Maasbol, Alfred G.; and Sim, Alexander K., to Hermann Gottfried Schnabel Fa.; and Helm, Karl O. Thrombocyte aggregation inhibiting composition and methods. 4,279,914, Cl. 424-258.000.
Mac Valves, Inc.: *See*—
Neff, James A., 4,279,271, Cl. 137-493.800.
MacDermid Incorporated: *See*—
Kukanskis, Peter E.; Grunwald, John J.; Ferrier, Donald R.; and Sawoska, David A., 4,279,948, Cl. 427-305.000.
MacGregor, Cline J.; and Parker, Roy A., to Goodyear Tire & Rubber Company, The. Loaded polyurethane articles. 4,279,799, Cl. 260-37.00N.
Machida Endoscope Co., Ltd.: *See*—
Chikama, Toshio, 4,279,246, Cl. 128-6.000.
MacLeane, Johannes: *See*—
Stanwood, Jay W.; Clarke, William A.; and MacLeane, Johannes, 4,279,275, Cl. 138-109.000.
Madl, Joseph, Jr. Access floor mounting assembly. 4,279,109, Cl. 52-263.000.
Maeda, Takamichi: *See*—
Hayakawa, Masao; Maeda, Takamichi; and Kumura, Masao, 4,280,132, Cl. 357-70.000.
Maetani, Kazuo: *See*—
Hamagami, Teruaki; Maetani, Kazuo; and Sato, Fumio, 4,279,682, Cl. 156-367 000.
Maezawa, Shuji, to Kabushiki Kaisha Suwa Seikosha. Electronic timepiece and digital display therefor. 4,280,207, Cl. 368-21.000.
Mager, Herbert: *See*—
Konrad, Eugen; and Mager, Herbert, 4,279,613, Cl. 8-407.000.
Magers, Thomas A.; and Tabb, David L. Indicator composition and test device containing amine oxide, and method of use. 4,279,993, Cl. 435-14.000.
Magnetic Peripherals Inc.: *See*—
Hennenfent, Douglas J.; Johnson, Robert A.; and Holmstrand, Allan L., 4,279,102, Cl. 51-322.000.
Mahoney, Thomas P.: *See*—
Campbell, James R.; and Anspach, Roy L., 4,280,039, Cl. 219-78.110.
Maier, Karl: *See*—
Schneider, Franz; Schumann, Burkhard; Maier, Karl; and Hohn, Herbert, 4,279,561, Cl. 414-591.000.
Maines, Robert Q., to R. J. Harvey Instruments Corp. Photometric apparatus and methods for counting the particulate components of blood. 4,279,506, Cl. 356-39.000.
Maisonnave, Pierre, to Union Siderurgique du Nord et De L'est De La France (USINOR). Process for coating the inner wall of a furnace or like apparatus. 4,279,845, Cl. 264-30.000.
Makishima, Hiroshi; Toyoda, Tsunehiko; Okamura, Noriaki; Yano, Hirofumi; Mizoguchi, Akira; and Hiromori, Yasutaka, to Dai Nippon Toryo Co., Ltd.; and Matsushita Electric Industrial Co., Ltd. Ink composition for ink jet recording. 4,279,653, Cl. 106-22.000.
Makuch, John A.; and Monaghan, Kevin J., to Bunker Ramo Corporation. Hermaphroditic fiber optic connector. 4,279,466, Cl. 350-96.210.
Malcolm, Elmer L. Combination water spray and rotary brush attachment. 4,279,051, Cl. 15-29.000.
Man, Maurice C. M.: *See*—
Tseung, Alfred C. C.; and Man, Maurice C. M., 4,279,713, Cl. 204-129.000.
Manawatu Textile Dyers Limited: *See*—
Cox, Andrew G., 4,279,135, Cl. 68-15.000.
Mandai, Hiroshi: *See*—
Suganuma, Nobuo; Uematsu, Michio; Mandai, Hiroshi; Horiguchi, Yasunobu; and Masamizu, Koji, 4,279,888, Cl. 424-49.000.
Mandova, Maria L.: *See*—
Novev, Todor V.; Ovcharov, Sava D.; Yordanov, Nikola S.; Acheva, Jivka P.; Yordanov, Yordan I.; and Mandova, Maria L., 4,279,708, Cl. 204-46.00R.
Mangeot, Philippe: *See*—
Comby, Georges; and Mangeot, Philippe, 4,280,075, Cl. 313-93.000.
Mangiavacchi, Jacques; Chauvelot, Alain; and Dolain, Claude, to Glaenzer Spicer. Tulip member for a tripod joint and process for producing the same. 4,279,528, Cl. 403-57.000.
Mann, Arnold, to VDO Adolf Schindling AG. Device for the control of the traveling speed of a motor vehicle. 4,279,228, Cl. 123-352.000.
Mansbach, Lillian: *See*—
Gutcho, Sidney; and Mansbach, Lillian, 4,279,859, Cl. 422-61.000.
MAPAL Fabrik fur Prazisionswerkzeuge Dr. Kress KG: *See*—
Kress, Dieter; and Haberle, Friedrich, 4,279,550, Cl. 408-59.000.
Marcoux, Leo; and Berg, Peter G., to Texas Instruments Incorporated. Early fuel evaporation of carburetion system. 4,279,234, Cl. 123-549.000.
Marcy, Robert D., to United States of America, Air Force. Laser gas temperature control and spacial equalizer. 4,280,105, Cl. 331-94.50P.
Marinkonsult Hans Lundberg AB: *See*—
Lundberg, Hans G., 4,279,212, Cl. 114-222.000.
Mark, H. Wayne: *See*—
Bertus, Brent J.; McKay, Dwight L.; and Mark, H. Wayne, 4,279,735, Cl. 208-113.000.
Markart, Ernst: *See*—
Blumel, Reinhard; Denker, Jurgen; Markart, Ernst; Trapp, Werner; Tutzer, Michael; and Woznik, Reinhard, 4,279,514, Cl. 356-445.000.
Markina, Ljudmila V.: *See*—
Gladush, Vasily M.; Eremenko, Nena G.; Markina, Ljudmila V.; Kochuev, Evgeny S.; Krainik, Mikhail P.; Cherkasova, Evgenia E.; and Lyashenko, Nikolai M., 4,279,963, Cl. 428-433.000.
Marshall, Albert H.; and Derderian, George, to United States of America, Navy. Thermal target and weapon fire simulator for thermal sights. 4,279,599, Cl. 434-21.000.
Marshall, Robert T.: *See*—
Anderson, Maynard E.; Marshall, Robert T.; and Stringer, William C., 4,279,059, Cl. 17-51.000.
Mart, Carl F.; and Waits, Douglas B., to Anaconda Company, The. Variable gap roll along switching. 4,280,201, Cl. 367-56.000.
Martel, Bernard: *See*—
Bauer, Philippe; Lamy, Jean; and Martel, Bernard, 4,279,230, Cl. 123-440.000.
Martel, Jacques; Tessier, Jean; and Demoute, Jean-Pierre, to Roussel Uclaf. Novel cyclopropane carboxylic acid esters. 4,279,835, Cl. 260-465.00D.
Martin, A. Eugene, Sr. Apparatus for the automated manufacture of heavy concrete objects. 4,279,583, Cl. 425-253.000.
Martin, Anthony N., to United Technologies Corporation. Engine module life tracking system. 4,280,185, Cl. 364-506.000.
Martin, Billy P.; and Vanis, Vernon V., to Goodyear Tire & Rubber Company, The. Slide surface compound for track-driven vehicle. 4,279,449, Cl. 305-35.0EB.
Martin, Merritt W., Jr., to Roman Machine Co. Blow molding machine. 4,279,587, Cl. 425-531.000.
Martin, Michael T. X-ray scaling catheter. 4,279,252, Cl. 128-349.00R.
Martin-Smith, Michael; Price, Barry J.; Bradshaw, John; and Clitherow, John W., to Glaxo Group Limited. Amine derivatives and pharmaceutical compositions containing them. 4,279,911, Cl. 424-251.000.
Marto, John H., to J. I. Case Company. Ignition system control. 4,279,179, Cl. 74-850.000.
Marulic, Walter J., to Pullman Incorporated. Passenger car compartment upper sleeping berth support assembly. 4,279,203, Cl. 105-321.000.
Marusho Industrial Co., Ltd.: *See*—
Isogaya, Keiichi, 4,279,740, Cl. 209-12.000.
Marvin Glass & Associates: *See*—
Kulesza, Ralph J.; Alcock, James M.; and Meyer, Burton C., 4,279,098, Cl. 46-101.000.
Rivette, Denni F.; Meyer, Burton C.; and Nix, Donald F., 4,279,100, Cl. 46-179.000.
Marx, Matthias: *See*—
DeBeuckelaer, Gerard; Jarre, Wolfgang; Wurmb, Rolf; and Marx, Matthias, 4,279,757, Cl. 210-671.000.

Marzoli, Angelo, to F. lli Marzoli & C. S.p.A. Rotary ring for spinning and twisting frame. 4,279,119, Cl. 57-124.000.

Masak, Raymond J., to United States of America, Army. Adaptive steerable null antenna processor. 4,280,128, Cl. 343-100.0LE.

Masamizu, Koji: *See*—
Suganuma, Nobuo; Uematsu, Michio; Mandai, Hiroshi; Horiguchi, Yasunobu; and Masamizu, Koji, 4,279,888, Cl. 424-49.000.

Mashimo, Yukio; Iwashita, Tomonori; and Fukahori, Hidehiko, to Canon Kabushiki Kaisha. Electric driving device. 4,279,490, Cl. 354-173.000.

Maslak, Samuel H.: *See*—
Hornak, Thomas; Corcoran, John J.; and Maslak, Samuel H., 4,280,196, Cl. 365-45.000.

Mason, Eugene B. System for applying and wrapping line guides to a fishing rod blank. 4,279,684, Cl. 156-425.000.

Massachusetts Institute of Technology: *See*—
Suh, Nam P., 4,279,843, Cl. 264-11.000.

Masson, Pierre L.; Cambiaso, Cesar L.; De Steenwinkel, Floris; and Leek, Adrian E., to Technicon Instruments Corporation. Iummunoassay involving agglutination. 4,279,617, Cl. 23-230.00B.

Masugi, Takashi: *See*—
Takaya, Takao; Masugi, Takashi; Takasugi, Hisashi; and Kochi, Hiromu, 4,279,818, Cl. 424-246.000.

Masuhara, Toshiaki: *See*—
Minato, Osamu; Masuhara, Toshiaki; Sasaki, Toshio; and Kubo, Masaharu, 4,280,065, Cl. 307-473.000.

Mather, Joseph M.: *See*—
Sagaser, Thomas M.; and Mather, Joseph M., 4,279,566, Cl. 414-686.000.

Mathison, Pat: *See*—
Jaggi, Hans; Mathison, Pat; and DeBartolo, Paul, 4,279,055, Cl. 15-302.000.

Matire, P. Jeffrey: *See*—
Levy, Robert M.; and Matire, P. Jeffrey, 4,279,600, Cl. 434-219.000.

Matsubayashi, Hajime: *See*—
Fujioka, Hironari; and Matsubayashi, Hajime, 4,279,961, Cl. 428-328.000.

Matsuda, Shunsuke; Tsuchiya, Soji; Honma, Masami; and Nagamatsu, Gentaro, to Matsushita Electric Industrial Co., Ltd.; and Fuji Chemicals Industrial Co., Ltd. Positive resist for high energy radiation. 4,279,984, Cl. 430-270.000.

Matsuda, Yoshio, to Yoshida Kogyo, K.K. Warp-knit stringer tape for slide fasteners. 4,279,134, Cl. 66-195.000.

Matsui, Kazuma: *See*—
Nara, Akio; Takagi, Shigeru; and Matsui, Kazuma, 4,279,864, Cl. 422-179.000.

Matsumura, Isao, to Canon Kabushiki Kaisha. Eye examining instrument. 4,279,478, Cl. 351-13.000.

Matsushita Electric Corporation of America: *See*—
Rzeszewski, Theodore S., 4,280,104, Cl. 331-1.00A.

Matsushita Electric Industrial Co.: *See*—
Aoki, Masaki; Yoshida, Shigeru; Yamazoe, Hiroshi; and Nagasawa, Masahiro, 4,279,691, Cl. 156-656.000.

Matsushita Electric Industrial Co., Ltd.: *See*—
Gotou, Makoto; Kobayashi, Kazutsugu; and Okumura, Kenichiro, 4,280,072, Cl. 310-67.00R.
Koiso, Kazuhiro; Sanda, Masaaki; Hayashi, Mamoru; and Uesugi, Hiroaki, 4,279,454, Cl. 312-297.000.
Makishima, Hiroshi; Toyoda, Tsunehiko; Okamura, Noriaki; Yano, Hirofumi; Mizoguchi, Akira; and Hiromori, Yasutaka, 4,279,653, Cl. 106-22.000.
Matsuda, Shunsuke; Tsuchiya, Soji; Honma, Masami; and Nagamatsu, Gentaro, 4,279,984, Cl. 430-270.000.
Misaki, Takashi; Aoki, Takanori; and Miyawaki, Yukihiko, 4,280,146, Cl. 360-10.000.
Nakamura, Kazuo, 4,279,633, Cl. 65-41.000.
Ohmukai, Yoshimi; Tomisawa, Takeshi; and Kawasaki, Yoshitaka, 4,279,589, Cl. 431-328.000.

Matsuura, Hideaki: *See*—
Shiga, Akinobu; Fukui, Yoshiharu; Hanji, Katsumi; Sasaki, Toshio; Okawa, Masahisa; Matsuura, Hideaki; and Yamada, Yasuharu, 4,279,776, Cl. 252-429.00B.

Mattel, Inc.: *See*—
Dyer, Robert F.; Lewis, J. Stephen; Rosenthal, Janice E.; Mills-Winkler, James P.; and Schroeder, Robert F., 4,279,099, Cl. 46-119.000.

Matter, Robert C., to General Motors Corporation. Lead-calcium-tin battery grid. 4,279,977, Cl. 429-245.000.

Matthews, Ralph W.: *See*—
Evans, John V.; and Matthews, Ralph W., 4,280,053, Cl. 250-432.0PD.

Maurer, Alexander; Schrodter, Klaus; and Heymer, Gero, to Hoechst Aktiengesellschaft. Process for freeing phosphoric acid from organic contaminants. 4,279,878, Cl. 423-321.00R.

Maurer, Roland, to Gebruder Junghans GmbH. Arrangement for the disassembly of a circuit board. 4,279,072, Cl. 29-764.000.

Maute, Alfred; Teitz, Konrad; Baier, Klaus; and Heid, Hans, to Hewlett-Packard Company. Photometric absorption detector. 4,279,511, Cl. 356-328.000.

May, George A. Ultrasonic and capacitive electronic key systems. 4,280,119, Cl. 340-147.0MD.

May, Hans-Joachim: *See*—
Schoellkopf, Ulrich; Hausberg, Hans-Heinrich; Boell, Walter; May, Hans-Joachim; and Koenig, Horst, 4,280,008, Cl. 548-301.000.

Mayenschein, Harley. Clock apparatus. 4,280,211, Cl. 368-76.000.

Mayer, Wolfram: *See*—
Schuster, Karl-Ernst; Rudolph, Hans; Mayer, Wolfram; and Rosenkranz, Hans J., 4,279,718, Cl. 204-159.150.

McAlexander, Joseph C., III: *See*—
Reese, Edmund A.; White, Lionel S., Jr.; and McAlexander, Joseph C., III, 4,280,070, Cl. 307-279.000.

McAlister, Roy E. Radiant energy heat exchanger system. 4,279,244, Cl. 126-450.000.

McBride, Edward J., Jr. Combination mounting bracket, ball tension and balloon control device. 4,279,388, Cl. 242-152.100.

McCann, David H; White, Marvin H.; Turly, Alfred P.; and Frosch, Robert A. Time delay and integration detectors using charge transfer devices. 4,280,141, Cl. 358-213.000.

McClure, Robert I.: *See*—
Scott, John C.; and McClure, Robert I., 4,280,155, Cl. 360-98.000.

McClure, William F.; and Rohrbach, Roger P., to Southeastern Blueberry Council, Inc. Asynchronous blueberry sorter. 4,279,346, Cl. 209-582.000.

McCord, Dick P.; and Eberhardt, Mark E., Jr., to Hobart Corporation. Magnetic coupling for a weighing balance assembly. 4,279,317, Cl. 177-185.000.

McCord, Herbert W.: *See*—
Right, Robert W.; McCord, Herbert W.; and Podany, Vaclav O., 4,280,123, Cl. 340-384.00E.

McCoy, Paul: *See*—
Low, William H.; Hetrick, Vernon L.; and McCoy, Paul, 4,279,084, Cl. 37-42.00R.

McDonnell Douglas Corporation: *See*—
Woods, Leodis V.; Stassi, Paul; and Wilkinson, Ralph A., 4,279,995, Cl. 435-38.000.

McDonough, Martin S.: *See*—
Baird, Donald H.; and McDonough, Martin S., 4,279,726, Cl. 204-192.00P.

McFiggans, Robert B.: *See*—
Jones, Howell A., Jr.; and McFiggans, Robert B., 4,280,179, Cl. 364-464.000.

McGuffey, Gale W.: *See*—
Carey, Richard L.; and McGuffey, Gale W., 4,280,097, Cl. 324-434.000.

McIntyre, John M.; and Caldwell, Donald L., to Dow Chemical Company, The. Preparation of porous electrodes. 4,279,709, Cl. 204-98.000.

McIntyre, William H., to Westinghouse Electric Corp. Technique for in situ calibration of a gas detector. 4,279,142, Cl. 73-1.00G.

McKay, Dwight L.: *See*—
Bertus, Brent J.; McKay, Dwight L.; and Mark, H. Wayne, 4,279,735, Cl. 208-113.000.

McKenzie, Kenneth G., to Greening Donald Co. Ltd. End assembly for wire strand. 4,279,531, Cl. 403-267.000.

McKinley, Ronald R.; Hamel, Robert E., Jr.; and Dolan, Bernard J., to Dolan-Jenner Industries, Inc. Optical fibers. 4,280,122, Cl. 340-380.000.

McKinney, Laurence O. Method and apparatus for processing herbaceous plant materials including the plant cannabis. 4,279,824, Cl. 260-345.300.

McKinnon, Neil A.: *See*—
Garvie, Ronald C.; Hannink, Richard H. J.; and McKinnon, Neil A., 4,279,655, Cl. 106-57.000.

McMillan, Larry D.: *See*—
Goldman, Jon C.; McMillan, Larry D.; and Price, James B., 4,279,947, Cl. 427-255.200.

McMullan, Robert G., to SCM (Canada) Limited. Rectangular container/applicator package for dimensionally stable solid paints and related materials. 4,279,526, Cl. 401-97.000.

Mears, James W.: *See*—
Fischer, Michael A.; and Mears, James W., 4,279,309, Cl. 169-37.000.

Medi-Physics, Inc.: *See*—
Baldwin, Ronald M.; Lin, Tz-Hong; and Winchell, Harry S., 4,279,887, Cl. 424-1.500.

Medovar, Boris I.; Baglai, Vitaly M.; Us, Vasily I.; Bogachenko, Alexei G.; Timashov, Grigory A.; Fedorovsky, Boris B.; Bondarenko, Oleg P.; Shtanko, Jury P.; Artamonov, Viktor L.; Pavlov, Leonid V.; Eltsov, Konstantin S.; Stetsenko, Nikolai V.; Kaganovsky, Gary P.; Korotkov, Albert N.; and Popov, Sergei S. Method for electroslag remelting of metals. 4,279,642, Cl. 75-10.00C.

Meiksin, Zvi H.: *See*—
DelVecchio, Robert M.; and Meiksin, Zvi H., 4,280,114, Cl. 338-2.000.

Meineke, Sam W.; and Nedell, Harold. Exhaust muffler. 4,279,326, Cl. 181-228.000.

Meisel, Thomas C., Jr., to Caterpillar Tractor Co. Track tensioning apparatus. 4,279,318, Cl. 180-9.640.

Meisert, Ernst; Bohne, Franz-Josef; Brecht, Klaus; Mormann, Werner; Krohn, Wolfgang; and Henes, Gerhard, to Bayer Aktiengesellschaft. Process for the production of cellular polyurethane elastomers. 4,280,007, Cl. 521-159.000.

Memorex Mini Disc Drive Corp.: *See*—
Scott, John C.; and McClure, Robert I., 4,280,155, Cl. 360-98.000.

Menge, Heinz G.: *See*—
Eistetter, Klaus; Schaefer, Hartmann; and Menge, Heinz G., 4,279,918, Cl. 424-274.000.

Mercantile Development, Inc.: *See*—
Gagliardi, Joseph; and Lee, Charles A., 4,279,535, Cl. 405-15.000.

Merck & Co., Inc.: *See*—
Baldwin, John J.; and Ponticello, Gerald S., 4,279,913, Cl. 424-258.000.

Merli, Claudio; and Francia, Carlo, to Euteco S.p.A. Pneumatic tires having ornamented sidewalls, and to their manufacture. 4,279,286, Cl. 152-353.00R.

Messer Griesheim: *See*—
Kiessling, Werner; and Lookhof, Wolfgang, 4,280,041, Cl. 219-121.0PT.

Messer Griesheim GmbH: *See*—
Buchmuller, Jurgen; Nobis, Peter; and Volker, Wolfgang, 4,279,626, Cl. 55-204.000.

Metzeler Schaum GmbH: *See*—
Bruckner, Georg F.; Geike, Bernd; Schoen, Bernd-Jurgen; and Berger, Fritz, 4,279,038, Cl. 2-425.000.

Metzinger, Lothar: *See*—
Wallner, Josef; and Metzinger, Lothar, 4,279,517, Cl. 366-177.000.

Meyer, Burton C.: *See*—
Kulesza, Ralph J.; Alcock, James M.; and Meyer, Burton C., 4,279,098, Cl. 46-101.000.
Rivette, Denni F.; Meyer, Burton C.; and Nix, Donald F., 4,279,100, Cl. 46-179.000.

Meyer, Olga: *See*—
Meyer, Rainer-Leo; John, Rainmar; Eisenhauer, Bernhard; and Baumstark, Herta, 4,279,962, Cl. 428-332.000.

Meyer Products, Inc.: *See*—
Low, William H.; Hetrick, Vernon L.; and McCoy, Paul, 4,279,084, Cl. 37-42.00R.

Meyer, Rainer: *See*—
Meyer, Rainer-Leo; John, Rainmar; Eisenhauer, Bernhard; and Baumstark, Herta, 4,279,962, Cl. 428-332.000.

Meyer, Rainer-Leo; John, Rainmar; Eisenhauer, Bernhard; and Baumstark, Herta, to Meyer, Olga; and Meyer, Rainer. Protective coating for cathodically protected metal surfaces. 4,279,962, Cl. 428-332.000.

Meyer, Robert: *See*—
Delapierre, Gilles; and Meyer, Robert, 4,279,475, Cl. 350-363.000.

Meyerand, Russell G., Jr.: *See*—
Fitzpatrick, Peter R.; Meyerand, Russell G., Jr.; and Shotwell, Kenneth E., 4,279,294, Cl. 165-45.000.

Michaelis, Klaus P.; and Wirth, Hermann O., to Ciba-Geigy Corporation. Mixture of di- or trithiophosphoric acid diesters, processes for producing it and its use. 4,279,761, Cl. 252-46.400.

Michel, Walter: *See*—
Kruger, Friedrich; and Michel, Walter, 4,279,758, Cl. 210-700.000.

Micheli, Adolph L., to General Motors Corporation. Oxidized aluminum overcoat for solid electrolyte sensor. 4,279,666, Cl. 148-6.300.

Mickowski, John. Microcomputer control system. 4,280,182, Cl. 364-475.000.

Midland-Ross Corporation: *See*—
Acre, Leon R., 4,279,273, Cl. 137-627.500.

Mikami, Teigo; Miyano, Hiroaki; and Kosugi, Masahide, to Toyota Jidosha Kogyo Kabushiki Kaisha. Device for detecting gates in an automatic pouring machine for casting. 4,279,290, Cl. 164-154.000.

Miki, Masayoshi: *See*—
Ito, Naoya; Saito, Kiichi; Yoshida, Takeshi; Aoki, Masahiro; Okubo, Masao; and Miki, Masayoshi, 4,279,648, Cl. 75-128.00C.

Miles Laboratories, Inc.: *See*—
Boguslaski, Robert C.; Burd, John F.; and Carrico, Robert J., 4,279,992, Cl. 435-7.000.

Miller, Donald L., to Facet Enterprises, Inc. Electromagnetically released spring applied friction brake with torque booster. 4,280,073, Cl. 310-77.000.

Miller, George A.: *See*—
Lewis, Sheldon N.; Miller, George A.; and Law, Andrew B., 4,279,762, Cl. 252-47.500.

Miller, Henry, deceased; and Byrne, Desmond, legal representative, to Acme Flooring Limited. Roadway nosing unit. 4,279,532, Cl. 404-68.000.

Miller, Jan D., to University of Utah. Air-sparged hydrocyclone and method. 4,279,743, Cl. 209-211.000.

Miller, Matthew N., to Fairchild Industries, Inc. Collapsible launching system. 4,279,195, Cl. 92-88.000.

Miller, Richard R.; and Simi, Edward A., to Douglas Dynamics Inc. Auxiliary light wiring harness. 4,280,062, Cl. 307-10.0LS.

Miller, Wendell D.: *See*—
Erb, Tom L.; and Miller, Wendell D., 4,279,167, Cl. 73-861.250.

Miller, William R., to American Sterilizer Company. Unmanned material handling system for servicing a multi-level structure. 4,279,563, Cl. 414-611.000.

Milles, Peter, to S. Franzen Sohne (GmbH & Co.). Combination lock for suitcases, bags or the like. 4,279,136, Cl. 70-71.000.

Mills-Winkler, James P.: *See*—
Dyer, Robert F.; Lewis, J. Stephen; Rosenthal, Janice E.; Mills-Winkler, James P.; and Schroeder, Robert F., 4,279,099, Cl. 46-119.000.

Milwaukee Cylinder Corporation: *See*—
Schink, Richard R.; and Craig, Thomas A., 4,279,269, Cl. 137-206.000.

Minamitani, Fumio, to Isuzu Motors Ltd. Locking device for a tilt steering wheel. 4,279,176, Cl. 74-493.000.

Minato, Osamu; Masuhara, Toshiaki; Sasaki, Toshio; and Kubo, Masaharu, to Hitachi, Ltd. Tri-state type driver circuit. 4,280,065, Cl. 307-473.000.

Mine Safety Appliances Company: *See*—
Hough, William V.; Little, John L.; and Warheit, Kevin E., 4,279,951, Cl. 427-437.000.

Minnesota Mining and Manufacturing Company: *See*—
Bailey, Dale O.; and Honl, Paul G., 4,280,002, Cl. 435-298.000.
Norrell, Donald L., 4,280,145, Cl. 358-289.000.

Minolta Camera Kabushiki Kaisha: *See*—
Kobayashi, Haruo, 4,279,493, Cl. 354-197.000.

Misaki, Takashi; Aoki, Takanori; and Miyawaki, Yukihiko, to Matsushita Electric Industrial Co., Ltd. Rotary head type magnetic video recording and reproducing apparatus. 4,280,146, Cl. 360-10.000.

Misumi, Akira; and Saito, Shunji, to Hitachi, Ltd. Thermionic emission cathodes. 4,279,784, Cl. 252-513.000.

Mitchell, Roger E.: *See*—
Wells, Peter M., Jr.; and Mitchell, Roger E., 4,280,092, Cl. 324-51.000.

Mitsui Petrochemical Industries, Ltd.: *See*—
Hiraoka, Takayuki; and Fujiyoshi, Kenji, 4,279,957, Cl. 428-212.000.

Mitsui Toatsu Chemicals Inc.: *See*—
Yamamoto, Ryuichi; and Torisu, Masaaki, 4,279,838, Cl. 260-968.000.

Mitutoyo Mfg. Co. Ltd.: *See*—
Nakaya, Tadao, 4,279,080, Cl. 33-174.00L.

Miura, Hideichi: *See*—
Chino, Koichi; Yusa, Hideo; Oda, Akira; Miura, Hideichi; Horiuchi, Susumu; and Takamura, Yoshiyuki, 4,279,692, Cl. 159-6.00W.

Miyagawa, Fumiko; Ikenaka, Yoshiharu; and Sakaguchi, Makoto, to Rex Industries Co., Ltd. Machine tool. 4,279,182, Cl. 82-28.00R.

Miyake, Masaya: *See*—
Fujimori, Naoji; Tobioka, Masaaki; Asai, Tsuyoshi; Yamamoto, Takaharu; and Miyake, Masaya, 4,279,651, Cl. 75-233.000.

Miyano, Hiroaki: *See*—
Mikami, Teigo; Miyano, Hiroaki; and Kosugi, Masahide, 4,279,290, Cl. 164-154.000.

Miyao, Kouhei: *See*—
Ishida, Nakao; Satoh, Hiroshi; Suzuki, Fujio; and Miyao, Kouhei, 4,279,892, Cl. 424-85.000.

Miyawaki, Yukihiko: *See*—
Misaki, Takashi; Aoki, Takanori; and Miyawaki, Yukihiko, 4,280,146, Cl. 360-10.000.

Miyazaki, Hidetaka: *See*—
Izumi, Yusuke; Miyazaki, Hidetaka; and Kawahara, Shin-ichi, 4,279,883, Cl. 423-584.000.

Mizoguchi, Akira: *See*—
Makishima, Hiroshi; Toyoda, Tsunehiko; Okamura, Noriaki; Yano, Hirofumi; Mizoguchi, Akira; and Hiromori, Yasutaka, 4,279,653, Cl. 106-22.000.

Mizuno, Kenji: *See*—
Ohnishi, Yoshitake; Itoh, Masaki; Mizuno, Kenji; and Gokan, Hiroshi, 4,279,986, Cl. 430-280.000.

Mizusawa, Mitsutoyo, to Nissin Kogyo Kabushiki Kaisha. Brake oil pressure controlling valve device for vehicle use. 4,279,447, Cl. 303-6.00C.

Mobil Oil Corporation: *See*—
Haag, Werner O.; and Huang, Tracy J., 4,279,830, Cl. 518-700.000.

Moe, Walter; and Diker, Charles M. Liquid dispenser and applicator. 4,279,527, Cl. 401-277.000.

Mogi, Takao; Ishigaki, Yoshio; and Okada, Hisao, to Sony Corporation. Muting circuit for a television receiver. 4,280,139, Cl. 358-165.000.

Molins Limited: *See*—
Bolt, Reginald C., 4,279,144, Cl. 73-38.000.

Moll, Edward W. Minimum space digital storage of analog information. 4,280,192, Cl. 364-900.000.

Molloy, Albert G., Jr.: *See*—
Kammerman, Steven B.; Kawasaki, Frank; and Molloy, Albert G., Jr., 4,279,414, Cl. 272-3.000.

Monaghan, Kevin J.: *See*—
Makuch, John A.; and Monaghan, Kevin J., 4,279,466, Cl. 350-96.210.

Monma, Hideo: *See*—
Takahashi, Masayuki; and Monma, Hideo, 4,280,213, Cl. 368-187.000.

Monotype Corporation Limited, The: *See*—
England, Charles J.; and Bakewell, Brian A., 4,279,483, Cl. 354-5.000.

Monsanto Company: *See*—
Baxter, Samuel; and Changani, Pushpkumar D., 4,279,848, Cl. 264-53.000.

Montealegre, James, to Champion International Corporation. Air freshener carton. 4,279,373, Cl. 229-11.000.

Montedison S.p.A.: *See*—
Gozzo, Franco; Abbruzzese, Luigi; and Longoni, Angelo, 4,279,927, Cl. 424-322.000.

Mooney, Jac A., to Bradley Time Division, Elgin National. Electronic alarm clock. 4,280,209, Cl. 368-71.000.

Moore, Richard D., to Plastic Techniques, Inc. Collar for cake discharge chute of rotatable disc filter. 4,279,749, Cl. 210-330.000.

Morentz, John D.: *See*—
Schevey, William R.; Weslowski, Robert G.; and Morentz, John D., 4,279,279, Cl. 141-5.000.

Morgan, Frank S. Adjustable headgear suspension. 4,279,037, Cl. 2-421.000.

Morgan, Glenn; and Morris, Robert B., to American Standard Inc. Manual release mechanism for spring-applied parking brake. 4,279,332, Cl. 188-170.000.

Mori, Masashi: *See*—
Danjyo, Hiroyuki; and Mori, Masashi, 4,279,844, Cl. 264-30.000.

Mori, Mitsuhiro: *See*—
Ono, Yuichi; Ito, Kazuhiro; Mori, Mitsuhiro; Aoki, Masaaki; and Kurata, Kazuhiro, 4,280,131, Cl. 357-17.000.
Mori, Toshihiro, to JECO Co. Ltd. Arc discharge preventing circuit of transfer switch for use with inductive loads. 4,280,160, Cl. 361-3.000.
Morihara, Ko: *See*—
Hayashi, Kohtaro; Morihara, Ko; and Nakamura, Kohji, 4,279,580, Cl. 425-72.00R.
Morimoto, Yoshinori, to Ryobi Ltd. Bail latching and releasing mechanism for spinning reel. 4,279,387, Cl. 242-84.20G.
Morioka, Moto: *See*—
Oka, Yoshihiko; Ishida, Hitoshi; Morioka, Moto; Numusaki, Yoso; Yamafuji, Tsutomu; Osono, Takashi; and Umezawa, Hamao, 4,279,997, Cl. 435-80.000.
Morita, Kazuyuki: *See*—
Kashima, Tsunehiro; Sakoda, Shunsuke; Tsuda, Hidetoshi; Hiramatsu, Tamihei; and Morita, Kazuyuki, 4,280,136, Cl. 358-93.000.
Mormann, Werner: *See*—
Meisert, Ernst; Bohne, Franz-Josef; Brecht, Klaus; Mormann, Werner; Krohn, Wolfgang; and Henes, Gerhard, 4,280,007, Cl. 521-159.000.
Morningstar, Leroy J.: *See*—
Zell, Dale R.; and Morningstar, Leroy J., 4,279,074, Cl. 29-866.000.
Morris, Jerald D., to Dresser Industries, Inc. Rotary rock bit fluid center seal. 4,279,450, Cl. 308-8.200.
Morris, Robert B.: *See*—
Morgan, Glenn; and Morris, Robert B., 4,279,332, Cl. 188-170.000.
Morrison Company, Inc.: *See*—
Morrison, Donald; and Muma, William T., Jr., 4,279,676, Cl. 156-159.000.
Morrison, Donald; and Muma, William T., Jr., to Morrison Company, Inc. Process of making a belting joint. 4,279,676, Cl. 156-159.000.
Moses, Peter R., to Duracell International Inc. Non-aqueous electrolyte cell. 4,279,972, Cl. 429-50.000.
Mossman, Colin F.: *See*—
Barnett, Roger C.; Sharpless, Robert G.; and Mossman, Colin F., 4,279,685, Cl. 156-509.000.
Motor Wheel Corporation: *See*—
Daudi, Anwar; Golata, John H.; and Triponi, Doarde G., 4,279,287, Cl. 152-375.000.
Motorola, Inc.: *See*—
Goldman, Jon C.; McMillan, Larry D.; and Price, James B., 4,279,947, Cl. 427-255.200.
Smith, Philip S., 4,280,190, Cl. 364-770.000.
Mottine, John J., Jr.: *See*—
Lueddecke, Donald E.; Mottine, John J., Jr.; and Vesperman, William C., 4,279,789, Cl. 260-17.00R.
MTU Motoren-Und Turbinen-Union Munchen GmbH: *See*—
Betz, Wolfgang, 4,279,581, Cl. 425-78.000.
Muccitelli, John A., to Betz Laboratories, Inc. Use of improved hydroquinone oxygen scavenger in aqueous mediums. 4,279,767, Cl. 252-178.000.
Mueller, Martin: *See*—
Arndt, Carl; and Mueller, Martin, 4,279,585, Cl. 425-403.000.
Muldrow, Charles N., Jr., to Associated Lead Inc. Antimony mercaptides as processing stabilizers for vinyl halide resins. 4,279,806, Cl. 260-45.75B.
Mullenberg, Ralph. Flanged connection for shafts or tubes. 4,279,530, Cl. 403-337.000.
Mullikin, Raymond L.: *See*—
Harvey, Richard D.; Gallaher, Thomas L.; Mullikin, Raymond L.; and Small, Thomas L., 4,279,658, Cl. 106-213.000.
Muma, William T., Jr.: *See*—
Morrison, Donald; and Muma, William T., Jr., 4,279,676, Cl. 156-159.000.
Munn, Alfred: *See*—
Huston, Paul O.; and Munn, Alfred, 4,279,161, Cl. 73-743.000.
Munroe, Alan D., to United Technologies Corporation. Vane angle control. 4,279,568, Cl. 415-17.000.
Murabayashi, ideki: *See*—
Shimotori, Kazumi; Izumi, Isao; and Murabayashi, ideki, 4,280,046, Cl. 219-544.000.
Murai, Keiichi: *See*—
Kondo, Hideyo; and Murai, Keiichi, 4,279,500, Cl. 355-15.000.
Murakami Kaimeido Co., Ltd.: *See*—
Yamana, Toru, 4,279,473, Cl. 350-307.000.
Murakami, Tatsuo. Optical illumination device. 4,279,089, Cl. 40-547.000.
Murphy, Richard D.: *See*—
Adams, Don L.; Murphy, Richard D.; and Fischer, William C., 4,279,391, Cl. 244-17.130.
Murray Ohio Manufacturing Co., The: *See*—
Lawrence, Randall K.; and Stevens, Aaron A., 4,279,117, Cl. 56-11.300.
Myrens Verksted A/S: *See*—
Fritzvold, Bjorn H.; and Soteland, Nicolai, 4,279,694, Cl. 162-28.000.
Naffziger, Larry C., to Bank of America N.T. & S.A. Bearing assembly. 4,279,452, Cl. 308-36.100.
Nagamatsu, Gentaro: *See*—
Matsuda, Shunsuke; Tsuchiya, Soji; Honma, Masami; and Nagamatsu, Gentaro, 4,279,984, Cl. 430-270.000.
Nagano, Masashi; and Isobe, Mitsuhide, to Shimano Industrial Company Limited. Derailleur for a bicycle. 4,279,172, Cl. 474-82.000.
Nagasawa, Masahiro: *See*—
Aoki, Masaki; Yoshida, Shigeru; Yamazoe, Hiroshi; and Nagasawa, Masahiro, 4,279,691, Cl. 156-656.000.
Nagashima, Akira: *See*—
Iwasaki, Masayuki; Nagashima, Akira; and Sato, Shigeru, 4,279,982, Cl. 430-170.000.
Nahmias, Clement: *See*—
Ransom, Stephen A.; Hohmann, Jere W.; and Nahmias, Clement, 4,280,212, Cl. 368-82.000.
Nakagawa, Yunosuke: *See*—
Yagi, Kouichi; and Nakagawa, Yunosuke, 4,279,769, Cl. 252-186.000.
Nakahara, Shunichi: *See*—
Yoshikawa, Ryoichi; Okajima, Kazuhiko; Nakahara, Shunichi; and Nakayama, Sumio, 4,279,494, Cl. 354-288.000.
Nakahashi, Ken-ichi, to Olympus Optical Co., Ltd. Objective lens system for microscopes. 4,279,476, Cl. 350-414.000.
Nakaji, Edward M.: *See*—
Chao, Chente; Nakaji, Edward M.; and Bernick, Robert L., 4,279,070, Cl. 29-583.000.
Nakajima, Setsuo: *See*—
Koshida, Daikichi; Sugisawa, Ko; Kimura, Takashi; and Nakajima, Setsuo, 4,279,932, Cl. 426-89.000.
Nakajima, Yoshikazu, to Kabushiki Kaisha Mikuni Seisakusho. Composite material compositions using wasterpaper and method of producing same. 4,279,790, Cl. 260-17.40R.
Nakamura, Hiroshi, to Shinko Plant Co. Ltd. Automatic branch cut-off device. 4,279,281, Cl. 144-2.00Z.
Nakamura, Kazuo, to Matsushita Electric Industrial Co., Ltd. Method of producing magnetic head. 4,279,633, Cl. 65-41.000.
Nakamura, Kohji: *See*—
Hayashi, Kohtaro; Morihara, Ko; and Nakamura, Kohji, 4,279,580, Cl. 425-72.00R.
Nakamura, Sadayuki: *See*—
Kato, Tetsuo; Abeyama, Shozo; Kimura, Atsuyoshi; and Nakamura, Sadayuki, 4,279,646, Cl. 75-123.0AA.
Nakamura, Tsuneo, to Anritsu Keiki Kabushiki Kaisha. Surface temperature measuring device. 4,279,154, Cl. 73-359.00R.
Nakamura, Yasuhiko; and Yamakawa, Yoshio, to Nippondenso Co., Ltd. Air cleaning means for internal combustion engine. 4,279,630, Cl. 55-316.000.
Nakaya, Tadao, to Mitutoyo Mfg. Co. Ltd. Touch signalling probe. 4,279,080, Cl. 33-174.00L.
Nakayama, Masayuki, to Sony Corporation. Method of and apparatus for indicating length and remaining recording capacity of a recording tape. 4,280,159, Cl. 360-137.000.
Nakayama, Shigeru: *See*—
Nishikawa, Masaji; Amemiya, Norio; Yasuda, Tadahiro; and Nakayama, Shigeru, 4,279,980, Cl. 430-68.000.
Nakayama, Sumio: *See*—
Yoshikawa, Ryoichi; Okajima, Kazuhiko; Nakahara, Shunichi; and Nakayama, Sumio, 4,279,494, Cl. 354-288.000.
Nalco Chemical Company: *See*—
Pardikes, Dennis G., 4,279,759, Cl. 210-709.000.
Nancarrow, James H.: *See*—
Egli, Hans; Byrne, Joe L.; and Nancarrow, James H., 4,279,570, Cl. 415-53.00T.
Nance Childrens's Trust, The: *See*—
Campbell, James R.; and Anspach, Roy L., 4,280,039, Cl. 219-78.110.
Nance, Edward K., Jr.: *See*—
Campbell, James R.; and Anspach, Roy L., 4,280,039, Cl. 219-78.110.
Nara, Akio; Takagi, Shigeru; and Matsui, Kazuma, to Nippon Soken, Inc. Monolithic catalyst converter. 4,279,864, Cl. 422-179.000.
Nash, William D.: *See*—
Finch, Ray N.; and Nash, William D., 4,279,130, Cl. 62-544.000.
Nassi, Menahem; and Stonestrom, James P., to General Electric Company. Computerized tomographic reconstruction method utilizing reflection. 4,280,178, Cl. 364-414.000.
Natansohn, Samuel; and Su, Sophia R., to GTE Laboratories Incorporated. Liquid-liquid extraction process for the recovery of tungsten from low level sources. 4,279,870, Cl. 423-54.000.
National Gypsum Company: *See*—
White, George H.; and Petersen, Donald J., 4,279,673, Cl. 156-39.000.
Wing, Steven D.; and Smith, Richard E., 4,279,081, Cl. 33-479.000.
National Research Development Corporation: *See*—
Guralp, Cansun M., 4,280,206, Cl. 367-179.000.
Tseung, Alfred C. C.; and Man, Maurice C. M., 4,279,713, Cl. 204-129.000.
National Starch and Chemical Corporation: *See*—
Wurzburg, Otto B.; and Lenchin, Julianne M., 4,279,940, Cl. 426-590.000.
National Steel Corp.: *See*—
Evrard, Gerald D.; Cook, Henry S.; and Kamalich, Anthony J., 4,279,052, Cl. 15-93.00A.
Naumann, Klaus: *See*—
Fuchs, Rainer; Naumann, Klaus; Lantzsch, Reinhard; Hagemann, Hermann; Hammann, Ingeborg; Homeyer, Bernhard; Behrenz, Wolfgang; and Stendel, Wilhelm, 4,279,923, Cl. 424-304.000.
NCR Corporation: *See*—
Acharya, Rajguru M.; and Del Signore, James R., II, 4,280,082, Cl. 318-341.000.
Chambers, William I., 4,279,524, Cl. 400-564.100.

Nedell, Harold: *See—*
Meineke, Sam W.; and Nedell, Harold, 4,279,326, Cl. 181-228.000.

Nefediev, Yakov N.: *See—*
Pospelov, Boris S.; Bendersky, Alexandr F.; Kolesov, Jury A.; Nefediev, Yakov N.; Levkovich, Mikhail I.; and Asinovsky, Eduard N., 4,280,165, Cl. 361-236.000.

Neff, James A., to Mac Valves, Inc. Pressure regulator and flow control valve with pre-exhaust. 4,279,271, Cl. 137-493.800.

Neill, Daniel L.; and Tribe, Leonard T., to Kelsey-Hayes Company. Pressure transducer. 4,279,162, Cl. 73-746.000.

Nelson, Alfred R.; and Johnsen, Kenneth E., to Dow Chemical Company, The. Solvent blends for ethylene copolymers. 4,279,797, Cl. 260-33.40R.

Nelson, Stephen J., to Upjohn Company, The. Processes for making phosphorus containing aminothiocarbamoyl halides. 4,279,839, Cl. 260-968.000.

Nelson, Stephen J., to Upjohn Company, The. Processes for making phosphorus containing aminothiocarbamoyl halides. 4,279,840, Cl. 260-968.000.

Nemeth, Laszlo: *See—*
Jovanovics, Karola; Szasz, Kalman; Kellner, Bela; Nemeth, Laszlo; Relle, Zsuzsa; Bittner, Emil; Dezseri, Eszter; and Eles, Janos, 4,279,816, Cl. 260-244.400.
Jovanovics, Karola; Szasz, Kalman; Kellner, Bela; Nemeth, Laszlo; Relle, Zsuzsa; Bittner, Emil; Deszeri, Eszter; and Eles, Janos, 4,279,915, Cl. 424-262.000.
Jovanovics, Karola; Szasz, Kalman; Kellner, Bela; Nemeth, Laszlo; Relle, Zsuzsa; Bittner, Emil; Deszeri, Eszter; and Eles, Janos, 4,279,916, Cl. 424-262.000.

Nestle, Mara O.: *See—*
Bilofsky, Ruth C.; and Nestle, Mara O., 4,279,983, Cl. 430-228.000.

New Nippon Electric Co. Ltd.: *See—*
Tsutsui, Kenziro; and Kakei, Masamitsu, 4,280,078, Cl. 315-39.510.

New World Computer Company, Inc.: *See—*
Herman, Robert W.; and Kearns, William J., 4,280,157, Cl. 360-106.000.

Newcomb, Rosemarie. Method for producing nature prints. 4,279,200, Cl. 101-170.000.

Newman, Gerald H.: *See—*
Klemann, Lawrence P.; and Newman, Gerald H., 4,279,976, Cl. 429-197.000.

Newman, Ray L.: *See—*
Dziedzic, Chester J.; Cleveland, Joseph J.; and Newman, Ray L., 4,279,297, Cl. 165-165.000.

NGK Insulators, Inc.: *See—*
Ogawa, Yutaka; Takehara, Toshio; and Asami, Seiichi, 4,279,849, Cl. 264-63.000.

NGK Spark Plug Co., Ltd.: *See—*
Nishio, Shinji, 4,279,974, Cl. 429-104.000.

Nice, Ralph A.: *See—*
Nielson, Niel E.; Kreiling, Ronald L.; Hill, Robert C.; and Nice, Ralph A., 4,279,753, Cl. 210-605.000.

Nickence, John G., to Belden Corporation. Cover plate for electrical connector. 4,279,457, Cl. 339-36.000.

Nickles, Robert B., Jr.: *See—*
Knox, Lloyd C.; and Nickles, Robert B., Jr., 4,279,266, Cl. 137-68.00R.

Nicolas, Jacques: *See—*
Guillaume, Paul; Karinthi, Pierre; and Nicolas, Jacques, 4,279,208, Cl. 110-346.000.

Nielson, Niel E.; Kreiling, Ronald L.; Hill, Robert C.; and Nice, Ralph A., to Arco Environmental Company. Wastewater treatment system including multiple stages of alternate aerobic-anerobic bioreactors in series. 4,279,753, Cl. 210-605.000.

Nieuwkamp, Johannes G. M., to Stamicarbon B.V. Process for preparing 2-pyrrolidones. 4,279,820, Cl. 260-326.5FM.

Nihei, Masayasu: *See—*
Ashida, Eiji; Nihei, Masayasu; Wachi, Hiroshi; Sato, Akira; and Kokura, Satoshi, 4,280,137, Cl. 358-101.000.

Niihara, Koichi: *See—*
Hirai, Toshio; and Niihara, Koichi, 4,279,689, Cl. 156-614.000.

Nikolov, Dobrin V.: *See—*
Ivanov, Rumen V.; Nikolov, Dobrin V.; Bilsing, Ulrich; Weber, Heinz; and Schmidt, Manfred, 4,279,742, Cl. 209-166.000.

Nintendo Co., Ltd.: *See—*
Yokoi, Gunpei, 4,279,417, Cl. 273-1.00E.

Nippon Electric Co., Ltd.: *See—*
Nishida, Kazunori, 4,280,079, Cl. 315-169.400.
Ohnishi, Yoshitake; Itoh, Masaki; Mizuno, Kenji; and Gokan, Hiroshi, 4,279,986, Cl. 430-280.000.

Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Yokoyama, Kenji, 4,280,102, Cl. 330-85.000.

Nippon Kogaku K.K.: *See—*
Takahama, Akio; and Hatano, Tatsuro, 4,280,057, Cl. 250-551.000.

Nippon Soken, Inc.: *See—*
Nara, Akio; Takagi, Shigeru; and Matsui, Kazuma, 4,279,864, Cl. 422-179.000.

Nippon Stainless Steel Co., Ltd.: *See—*
Ito, Naoya; Saito, Kiichi; Yoshida, Takeshi; Aoki, Masahiro; Okubo, Masao; and Miki, Masayoshi, 4,279,648, Cl. 75-128.00C.

Nippon Telegraph and Telephone Public Corporation: *See—*
Fujiwara, Koichi; Yamauchi, Coro; Arita, Kishio; and Tsurumi, Shigeyuki, 4,279,649, Cl. 75-173.00A.
Nonogaki, Saburo; and Hatano, Yoshio, 4,279,985, Cl. 430-280.000.

Nippondenso Co., Ltd.: *See—*
Nakamura, Yasuhiko; and Yamakawa, Yoshio, 4,279,630, Cl. 55-316.000.

Nishida, Chikamasa: *See—*
Doi, Toshiaki; Suematsu, Shigeru; Nishida, Chikamasa; and Hiranuma, Hiroshi, 4,279,698, Cl. 176-22.000.

Nishida, Kazunori, to Nippon Electric Co., Ltd. Driving system for a plasma display panel. 4,280,079, Cl. 315-169.400.

Nishikawa, Masaji; Amemiya, Norio; Yasuda, Tadahiro; and Nakayama, Shigeru, to Olympus Optical Co., Ltd. Electrophotographic sensitizing screen. 4,279,980, Cl. 430-68.000.

Nishikido, Joji; Fukuoka, Yohei; and Tamura, Nobuhiro, to Asahi Kasei Kogyo Kabushiki Kaisha. Hydroxamic acid derivative and method of preparing metoclopramide using same. 4,279,836, Cl. 260-500.50H.

Nishikubo, Yasuhiko; and Sekine, Mitsuo, to Citizen Watch Co., Ltd. Electronic alarm timepiece. 4,280,210, Cl. 368-73.000.

Nishio, Shinji, to NGK Spark Plug Co., Ltd. Solid electrolytic material and use thereof. 4,279,974, Cl. 429-104.000.

Nissin Kogyo Kabushiki Kaisha: *See—*
Mizusawa, Mitsutoyo, 4,279,447, Cl. 303-6.00C.

Nitto Electric Industrial Co., Ltd.: *See—*
Urahama, Yoshiaki; and Numoto, Tetuo, 4,279,213, Cl. 116-200.000.

Nix, Donald F.: *See—*
Rivette, Denni F.; Meyer, Burton C.; and Nix, Donald F., 4,279,100, Cl. 46-179.000.

Nobis, Peter: *See—*
Buchmuller, Jurgen; Nobis, Peter; and Volker, Wolfgang, 4,279,626, Cl. 55-204.000.

Noble, Kenneth E., Jr.: *See—*
Noble, Kenneth E., Sr.; and Noble, Kenneth E., Jr., 4,279,704, Cl. 202-175.000.

Noble, Kenneth E., Sr.; and Noble, Kenneth E., Jr. Dry cleaning still apparatus. 4,279,704, Cl. 202-175.000.

Nomura, Yasushi, to Citizen Watch Co., Ltd. Electronic timepiece. 4,280,208, Cl. 368-66.000.

Nonogaki, Saburo; and Hatano, Yoshio, to Nippon Telegraph and Telephone Public Corporation; and Hitachi, Ltd. Photopolymer imaging using epoxy and bromine containing ethylenically unsaturated compounds. 4,279,985, Cl. 430-280.000.

Norrell, Donald L., to Minnesota Mining and Manufacturing Company. Non-linear, multi-speed, bi-directional facsimile subscan drive control. 4,280,145, Cl. 358-289.000.

Norris, Alan H., to WWG Industries, Inc. Self twist yarn and method and apparatus for making such yarns. 4,279,120, Cl. 57-204.000.

Norris, Geoffrey L. F.: *See—*
Davies, David H.; and Norris, Geoffrey L. F., 4,279,894, Cl. 424-122.000.

Norris, Philip R.: *See—*
Cocco, Vincent L.; Norris, Philip R.; and Wareham, Richard R., 4,279,503, Cl. 355-45.000.

Norsk Hydro a.s.: *See—*
Lande, Harald; and Johannessen, Leif, 4,279,529, Cl. 403-246.000.

North American Philips Corporation: *See—*
Tanka, David M.; and Reynolds, Thomas G., 4,280,162, Cl. 361-45.000.

Northern Telecom Limited: *See—*
Colombini, Ettore, 4,279,464, Cl. 350-96.190.

Northrop Corporation: *See—*
Stappaerts, Eddy A., 4,280,109, Cl. 331-94.50N.

Novev, Todor V.; Ovcharov, Sava D.; Yordanov, Nikola S.; Acheva, Jivka P.; Yordanov, Yordan I.; and Mandova, Maria L., to Institute po Zashtita na Metalite ot Korroziya. Combined brightener in sulfamate silver electroplating baths. 4,279,708, Cl. 204-46.00R.

Noz, Francis X. Equipment for continuous plating. 4,279,730, Cl. 204-206.000.

NRM Corporation: *See—*
Singh, Anand P., 4,279,438, Cl. 294-88.000.

Numata, Tatsuo: *See—*
Ishida, Kohji; and Numata, Tatsuo, 4,280,101, Cl. 329-167.000.

Numoto, Tetuo: *See—*
Urahama, Yoshiaki; and Numoto, Tetuo, 4,279,213, Cl. 116-200.000.

Numusaki, Yoso: *See—*
Oka, Yoshihiko; Ishida, Hitoshi; Morioka, Moto; Numusaki, Yoso; Yamafuji, Tsutomu; Osono, Takashi; and Umezawa, Hamao, 4,279,997, Cl. 435-80.000.

Nusslein, Ludwig; Baumert, Dietrich; and Pieroh, Ernst A., to Schering Aktiengesellschaft. 1,3,4-Thiadiazole-2-carboxylic acid derivatives, process for making the same and fungicidal and nematocidal compositions containing same. 4,279,907, Cl. 424-248.510.

Nystrand, Ernst D., to Paper Converting Machine Company. Method of lapping webs. 4,279,411, Cl. 270-39.000.

Oakland Corporation, The: *See—*
Wallace, Richard B., 4,279,943, Cl. 427-57.000.

O'Beirne, Andrew J.: *See—*
Lindsay, Gene K.; and O'Beirne, Andrew J., 4,279,774, Cl. 252-408.000.

Occidental Oil Shale, Inc.: *See—*
Cha, Chang Y., 4,279,302, Cl. 166-251.000.
Kilburn, James, 4,279,444, Cl. 299-2.000.

Occidental Research Corporation: *See—*
Woinsky, Samuel G., 4,279,125, Cl. 60-641.500.

Ochs, Charles S.: *See—*
Roberts, Cecil P.; and Ochs, Charles S., 4,279,115, Cl. 53-314.000.

O'Connor, Jeane: *See—*
Campbell, James R.; and Anspach, Roy L., 4,280,039, Cl. 219-78.110.

Oda, Akira: *See—*
Chino, Koichi; Yusa, Hideo; Oda, Akira; Miura, Hideichi; Horiuchi, Susumu; and Takamura, Yoshiyuki, 4,279,692, Cl. 159-6.00W.

Odor Control Systems, Inc.: *See—*
Horst, Ronald A.; and Hedrich, Ross R., 4,279,716, Cl. 204-149.000.

Ogasawara, Norio: *See—*
Tsuzuki, Kunihiko; Ogasawara, Norio; and Ema, Shigeo, 4,279,619, Cl. 44-56.000.

Ogawa, Mototugu, to Olympus Optical Co., Ltd. Film takeup device for an endoscope having a camera housed in a distal end portion of an endoscope sheath. 4,279,486, Cl. 354-62.000.

Ogawa, Yutaka; Takehara, Toshio; and Asami, Seiichi, to NGK Insulators, Inc. Method for producing cordierite ceramic honeycomb structural bodies. 4,279,849, Cl. 264-63.000.

Ogi, Keiji; Sasaki, Takashi; and Tosaka, Yasuo, to Konishiroku Photo Industry Co., Ltd. Light-sensitive, direct positive silver halide photographic material. 4,279,987, Cl. 430-409.000.

Ohishi, Michiro: *See—*
Shono, Tetsuji; Goto, Kazuo; and Ohishi, Michiro, 4,279,489, Cl. 354-155.000.

Ohlendorf, Heinrich-Wilhelm; Wolf, Klaus-Ullrich; Kaupmann, Wilhelm; and Heinemann, Henning, to Kali-Chemie Pharma GmbH. 3-Amino-1-benzoxepine derivatives and their salts and pharmaceutical compositions thereof. 4,279,904, Cl. 424-246.000.

Ohlendorf, Heinrich-Wilhelm; Wolf, Klaus-Ullrich; and Kaupmann, Wilhelm, to Kali-Chemie Pharma GmbH. 1-Benzoxepin-5 (2H)-one derivatives and pharmaceutical compositions. 4,279,905, Cl. 424-246.000.

Ohmori, Akio: *See—*
Sueoka, Akinori; Okamoto, Takehiko; Ohmori, Akio; Kawai, Syuji; and Ueda, Minoru, 4,279,752, Cl. 210-500.200.

Ohmukai, Yoshimi; Tomisawa, Takeshi; and Kawasaki, Yoshitaka, to Matsushita Electric Industrial Co., Ltd. Combustion device for liquid fuels. 4,279,589, Cl. 431-328.000.

Ohnishi, Yoshitake; Itoh, Masaki; Mizuno, Kenji; and Gokan, Hiroshi, to Nippon Electric Co., Ltd. Negative resist and radical scavenger composition with capability of preventing post-irradiation polymerization. 4,279,986, Cl. 430-280.000.

Ohta, Masafumi; Sakai, Kiyoshi; Hashimoto, Mitsuru; Kozima, Akio; and Sasaki, Masaomi, to Ricoh Company, Ltd. Electrophotographic elements containing trisazo compounds. 4,279,981, Cl. 430-73.000.

Ohta, Ryozo; Yoshizawa, Tadao; Sakaguchi, Masayuki; Hara, Yoshiaki; Kyomen, Junsuke; Yoneda, Ryuichi; and Enomoto, Hidekazu, to Kubota Ltd. Method of forming a socket end on a plastic pipe and a molding device for use of the method. 4,279,853, Cl. 264-230.000.

Ohyama, Noboru: *See—*
Kodama, Fumio; and Ohyama, Noboru, 4,279,952, Cl. 428-36.000.

Ohzeki, Toshio; and Semba, Takanori, to Argus Chemical Corporation. Alkylene-bis-thioalkanoic acid amide stabilizers for synthetic resins and synthetic resin compositions containing the same. 4,279,805, Cl. 260-45.9NC.

Oi, Tetsu: *See—*
Takagi, Kazumasa; Fukazawa, Tokuumi; and Oi, Tetsu, 4,279,772, Cl. 252-301.40F.

Oil States Rubber Company: *See—*
Landers, Don B., 4,279,546, Cl. 405-225.000.

Oka, Yoshihiko; Ishida, Hitoshi; Morioka, Moto; Numusaki, Yoso; Yamafuji, Tsutomu; Osono, Takashi; and Umezawa, Hamao, to Yamanouchi Pharmaceutical Co., Ltd. Process for production of aminoglycoside antibiotics. 4,279,997, Cl. 435-80.000.

Okada, Hisao: *See—*
Mogi, Takao; Ishigaki, Yoshio; and Okada, Hisao, 4,280,139, Cl. 358-165.000.

Okahara, Tetsushi: *See—*
Kamo, Izumi; and Okahara, Tetsushi, 4,279,660, Cl. 106-281.00R.

Okajima, Kazuhiko: *See—*
Yoshikawa, Ryoichi; Okajima, Kazuhiko; Nakahara, Shunichi; and Nakayama, Sumio, 4,279,494, Cl. 354-288.000.

Okamoto, Takehiko: *See—*
Sueoka, Akinori; Okamoto, Takehiko; Ohmori, Akio; Kawai, Syuji; and Ueda, Minoru, 4,279,752, Cl. 210-500.200.

Okamoto, Toshihiko; Isogai, Yo; Shudo, Koichi; and Takahashi, Soshiro, to Okamoto, Toshihiko; Isogai, Yo; Shudo, Koichi; and Sato, Susumu. N-(2-Substituted-4-pyridyl)ureas and thioureas as well as plant growth regulators containing same, and method for using compounds as plant growth regulators. 4,279,639, Cl. 71-94.000.

Okamura, Kiyohito: *See—*
Yajima, Seishi; Okamura, Kiyohito; Shishido, Toetsu; and Hasegawa, Yoshio, 4,279,654, Cl. 106-39.600.

Okamura, Noriaki: *See—*
Makishima, Hiroshi; Toyoda, Tsunehiko; Okamura, Noriaki; Yano, Hirofumi; Mizoguchi, Akira; and Hiromori, Yasutaka, 4,279,653, Cl. 106-22.000.

Okano, Hiroshi; and Gunji, Yoshihisa, to Toyota Jidosha Kogyo Kabushiki Kaisha. Rotating speed detecting device of a turbocharger. 4,279,576, Cl. 417-407.000.

Okano, Takashi, to Universal Pioneer Corporation. Focussing lens servo driving device for optical information reading device. 4,280,215, Cl. 369-45.000.

Okawa, Masahisa: *See—*
Shiga, Akinobu; Fukui, Yoshiharu; Hanji, Katsumi; Sasaki, Toshio; Okawa, Masahisa; Matsuura, Hideaki; and Yamada, Yasuharu, 4,279,776, Cl. 252-429.00B.

Okubo, Masao: *See—*
Ito, Naoya; Saito, Kiichi; Yoshida, Takeshi; Aoki, Masahiro; Okubo, Masao; and Miki, Masayoshi, 4,279,648, Cl. 75-128.00C.

Okuda, Nobuo: *See—*
Hidai, Yutaka; and Okuda, Nobuo, 4,280,186, Cl. 364-518.000.

Okumura, Kenichiro: *See—*
Gotou, Makoto; Kobayashi, Kazutsugu; and Okumura, Kenichiro, 4,280,072, Cl. 310-67.00R.

Okumura, Masamitsu: *See—*
Tobita, Yuichi; and Okumura, Masamitsu, 4,279,233, Cl. 123-519.000.

Okumura, Takeo: *See—*
Horin, Shoji; Hayashi, Shizuo; and Okumura, Takeo, 4,279,262, Cl. 132-7.000.

Oldenkamp, Jerry: *See—*
Antonwitsch, Lucien M., 4,279,744, Cl. 209-214.000.

Ollivier, Christian: *See—*
Amicel, Charles; Biot, Bernard; Butruille, Yves; and Ollivier, Christian, 4,279,678, Cl. 156-169.000.

Olympus Optical Co., Ltd.: *See—*
Kimura, Tadashi, 4,279,484, Cl. 354-25.000.
Kinoshita, Kunio, 4,279,247, Cl. 128-6.000.
Nakahashi, Ken-ichi, 4,279,476, Cl. 350-414.000.
Nishikawa, Masaji; Amemiya, Norio; Yasuda, Tadahiro; and Nakayama, Shigeru, 4,279,980, Cl. 430-68.000.
Ogawa, Mototugu, 4,279,486, Cl. 354-62.000.
Takagi, Takeji; and Hosaka, Kiyokazu, 4,279,245, Cl. 128-004.000.
Tojo, Tsutomu, 4,279,477, Cl. 350-414.000.

Ong, Sienling, to Hoechst Aktiengesellschaft. Process and agent for the coloring of textiles of polyester fibers. 4,279,615, Cl. 8-582.000.

Ono, Yuichi; Ito, Kazuhiro; Mori, Mitsuhiro; Aoki, Masaaki; and Kurata, Kazuhiro, to Hitachi, Ltd. Pleochroic light emitting diode and method of fabricating the same. 4,280,131, Cl. 357-17.000.

Onodera, Takayoshi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Vibration absorbing device for motor vehicle. 4,279,428, Cl. 280-95.00R.

Oronzio deNora Impianti Elettrichimici S.p.A.: *See—*
Pellegri, Alberto, 4,279,731, Cl. 204-254.000.

Osada, Yoshihito; Bell, Alexis T.; and Shen, Mitchel M., to University of California, The Regents of the. Polymerization of inorganic element-containing monomers using plasma. 4,279,723, Cl. 204-164.000.

Osakabe, Yoshio; and Yasuda, Hiroshi, to Sony Corporation. Apparatus for scanning an addressable memory. 4,280,199, Cl. 365-236.000.

Osawa Precision Industries, Ltd.: *See—*
Ishibashi, Takao; and Osonoi, Kenjiro, 4,279,481, Cl. 352-171.000.

Osborne, William E., to Homexx International Corp. Electronic lock. 4,280,163, Cl. 361-172.000.

Osegowitsch, Viktor: *See—*
Stemme, Otto; Fergg, Berthold; Osegowitsch, Viktor; and Viehrig, Wolfgang, 4,279,491, Cl. 355-27.000.

Osono, Takashi: *See—*
Oka, Yoshihiko; Ishida, Hitoshi; Morioka, Moto; Numusaki, Yoso; Yamafuji, Tsutomu; Osono, Takashi; and Umezawa, Hamao, 4,279,997, Cl. 435-80.000.

Osonoi, Kenjiro: *See—*
Ishibashi, Takao; and Osonoi, Kenjiro, 4,279,481, Cl. 352-171.000.

Osuna-Diaz, Jesus M., to Incoe Corporation. Method and apparatus for individual control of injection mold shut-off bushings. 4,279,582, Cl. 425-159.000.

Ota, Sakae: *See—*
Kojima, Kenji; Ota, Sakae; Katsumata, Akio; Kameyama, Toshiaki; Watanabe, Toshio; and Koike, Tadao, 4,279,501, Cl. 355-15.000.

Ovcharov, Sava D.: *See—*
Novev, Todor V.; Ovcharov, Sava D.; Yordanov, Nikola S.; Acheva, Jivka P.; Yordanov, Yordan I.; and Mandova, Maria L., 4,279,708, Cl. 204-46.00R.

Overhead Door Corporation: *See—*
Abbott, Ronald E., 4,279,050, Cl. 14-71.300.

Overhoff, Theodor; Schulten, Rudolf; Singh, Jasbir; Sylvester, Gerd; and Witte, Josef, to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung; and Bayer AG. Method of and apparatus for shutting down a gas-cooled nuclear reactor. 4,279,697, Cl. 176-22.000.

Owens-Corning Fiberglas Corporation: *See—*
Ahmad, Abu, 4,279,958, Cl. 428-215.000.

Owens-Illinois, Inc.: *See—*
Arndt, Carl; and Mueller, Martin, 4,279,585, Cl. 425-403.000.
Eigenmann, Ludwig, 4,279,534, Cl. 404-72.000.

Oy Kaukas AB: *See—*
Ukkonen, Keijo A.; and Simpura, Esa J., 4,279,827, Cl. 260-397.250.

Oyamada, Osamu: *See—*
Ebata, Sakae; Watari, Masahide; Hayakumo, Sunao; and Oyamada, Osamu, 4,279,701, Cl. 176-87.000.

P. H. Jones Hydrogeology, Inc.: *See—*
Jones, Paul H., 4,279,307, Cl. 166-314.000.

PACCAR Inc: *See—*
Stone, Thomas R., 4,279,321, Cl. 180-89.140.

Packer, Marvin, to RCA Corporation. Method for releasing printed wiring boards from printed wiring board racks. 4,279,073, Cl. 29-832.000.

Pagani, Hermes; Parenti, Francesco; Coronelli, Carolina; and Tamoni, Giorgion, to Gruppo Lepetit S.p.A. Biologically pure culture. 4,280,001, Cl. 435-253.000.

Pairis, Raul R. Interchangeable dado shaft assembly for circular saws. 4,279,280, Cl. 144-1.00F.

Palazzolo, Paul H.; and Dinardo, Joseph J. Ceiling mirror assembly. 4,279,110, Cl. 52-302.000.

Palm, John A.: *See—*
Greskovich, Charles D.; Prochazka, Svante; and Palm, John A., 4,279,656, Cl. 106-73.500.

Papadopulos, Michael S., to BICC Limited. Electric cable installations. 4,280,014, Cl. 174-14.00R.

Paparizos, Christos: *See—*
Velenyi, Louis J.; Paparizos, Christos; and Dolhyj, Serge R., 4,279,829, Cl. 260-429.900.

Paper Converting Machine Company: *See—*
Nystrand, Ernst D., 4,279,411, Cl. 270-39.000.

Paradiso, Mary R.: *See—*
Henkel, Herbert W.; and Paradiso, Mary R., 4,279,891, Cl. 424-73.000.

Pardikes, Dennis G., to Nalco Chemical Company. Settling column for use with solids monitor. 4,279,759, Cl. 210-709.000.

Parenti, Francesco: *See—*
Pagani, Hermes; Parenti, Francesco; Coronelli, Carolina; and Tamoni, Giorgion, 4,280,001, Cl. 435-253.000.

Parker-Hannifin Corporation: *See—*
Leutz, Donald C., 4,279,746, Cl. 210-130.000.

Parker, Roy A.: *See—*
MacGregor, Cline J.; and Parker, Roy A., 4,279,799, Cl. 260-37.00N.

Parker, Thomas S.: *See—*
Engel, Robert R.; Sarin, Virender K.; Gotlinksy, Barry; Tropp, Burton E.; and Parker, Thomas S., 4,279,898, Cl. 424-217.000.

Passafiume, Anthony, to Johnson & Johnson Baby Products Company. Method and apparatus for partitioning and shaping a fibrous batt. 4,279,369, Cl. 225-3.000.

Pastura, Albino; Kelbch, Gerhard; and Hulsmann, Hans-Leo, to Dynamit Nobel Aktiengesellschaft. Method of removing chlorinated phenol impurities. 4,280,012, Cl. 568-755.000.

Patentex S.A.: *See—*
Lacoste, Francois R., 4,279,418, Cl. 273-73.00D.

Paul B. Elder Company: *See—*
Boschetti, Armando; and Snoek, David J., 4,279,254, Cl. 128-395.000.

Paul, Donald G.; and Berriman, Lester P., to Dresser Industries, Inc. Fine particle separation apparatus. 4,279,627, Cl. 55-238.000.

Paul, Volker: *See—*
Bonse, Gerhard; Blank, Heinz U.; Brandes, Wilhelm; and Paul, Volker, 4,279,921, Cl. 424-285.000.

Pavlov, Leonid V.: *See—*
Medovar, Boris I.; Baglai, Vitaly M.; Us, Vasily I.; Bogachenko, Alexei G.; Timashov, Grigory A.; Fedorovsky, Boris B.; Bondarenko, Oleg P.; Shtanko, Jury P.; Artamonov, Viktor L.; Pavlov, Leonid V.; Eltsov, Konstantin S.; Stetsenko, Nikolai V.; Kaganovsky, Gary P.; Korotkov, Albert N.; and Popov, Sergei S., 4,279,642, Cl. 75-10.00C.

Payne, Robert H.; and Rackley, Robert L., to Du Pont de Nemours, E. I., and Company. Tri- or tetra-locular paint brush bristles. 4,279,053, Cl. 15-159.00A.

Pearce, Arnold P., to Flameless Furnaces Limited. Feed of material to fluidized beds. 4,279,222, Cl. 122-4.00D.

Pearsall, Harold I.: *See—*
Peck, Kenneth E., Jr.; and Pearsall, Harold I., 4,279,277, Cl. 140-92.200.

Peck, Kenneth E., Jr.; and Pearsall, Harold I., to Globe Tool & Engineering Company, The. Apparatus for manufacturing a dynamolelectric field member. 4,279,277, Cl. 140-92.200.

Pecoraro, Theresa: *See—*
Chianelli, Russell R.; and Pecoraro, Theresa, 4,279,737, Cl. 208-217.000.

Peeples, Dick E.; and Lohrbach, Mervin, to Champion International Corporation. Carton with self-locking top and bottom closure flaps and blank therefor. 4,279,377, Cl. 229-39.00R.

Peeples, Dick E.: *See—*
Lohrbach, Mervin; and Peeples, Dick E., 4,279,379, Cl. 229-39.00R.

Pellegri, Alberto, to Oronzio deNora Impianti Elettrichimici S.p.A. Novel electrolyzer. 4,279,731, Cl. 204-254.000.

Pellus, Gilbert: *See—*
Blanc, Jacques; Coulon, Andre; and Pellus, Gilbert, 4,279,706, Cl. 204-26.000.

Pemberton, Bernard E. Process of making signatures from preprinted webs for the manufacture of magazines or the like. 4,279,409, Cl. 270-5.000.

Pembroke, Richard W.: *See—*
Lobo, Mark A.; and Pembroke, Richard W., 4,279,386, Cl. 242-68.300.

Perez, Sergio J. Coffee dispenser contained inside a wall mounted bracket. 4,279,364, Cl. 222-162.000.

Perfection Corporation: *See—*
Alewitz, Sam, 4,279,435, Cl. 285-242.000.

Perhacs, Leslie, Jr.: *See—*
Barnes, George A.; and Perhacs, Leslie, Jr., 4,279,419, Cl. 273-87.400.

Perkins, Stephen P.; and Wormser, Alex F., to Wormser Engineering, Inc. Storage. 4,279,205, Cl. 110-245.000.

Perko, Inc.: *See—*
Hollenbeck, Leroy F., Jr., 4,280,028, Cl. 200-44.000.

Pervyshin, Alexandr N.: *See—*
Buryakov, Valery M.; Kolotilov, Nikolai N.; Tokhunts, Roman D.; Yakovlev, Vladimir S.; Akulov, Vladislav A.; Zabotin, Viktor G.; Levin, Viktor Y.; Lukachev, Viktor P.; Pervyshin, Alexandr N.; Zaitsev, Konstantin A.; Karakov, Vladimir D.; and Khasanov, Mubaraksha D., 4,279,405, Cl. 266-55.000.

PES Photographic Equipment Service Inc.: *See—*
Jaggi, Hans; Mathison, Pat; and DeBartolo, Paul, 4,279,055, Cl. 15-302.000.

Petaja, Danny A. Emergency locator beacon for skis. 4,279,433, Cl. 280-605.000.

Peters, Ronald L.: *See—*
Col, Martin H.; and Peters, Ronald L., 4,279,118, Cl. 56-329.000.

Petersen, Donald J.: *See—*
White, George H.; and Petersen, Donald J., 4,279,673, Cl. 156-39.000.

Peterson, Charles M.; and Lymburner, Frank M., to Harry S. Peterson Co., Inc. Roadway expansion joint. 4,279,533, Cl. 404-68.000.

Peterson, David: *See—*
Halle, Reidar; Peterson, David; and Lewis, Roger N., 4,279,831, Cl. 260-453.0RZ.

Petrolite Corporation: *See—*
Unmuth, George E., 4,279,659, Cl. 106-230.000.

Pfizer Inc.: *See—*
Campbell, Simon F., 4,279,910, Cl. 424-251.000.

Pfuntner, Richard A.: *See—*
Wyler, John S.; and Pfuntner, Richard A., 4,279,168, Cl. 73-861.350.

Phillips, Orville. Decorative panel and hanging device therefor. 4,279,086, Cl. 40-152.100.

Phillips Petroleum Company: *See—*
Bertus, Brent J.; McKay, Dwight L.; and Mark, H. Wayne, 4,279,735, Cl. 208-113.000.
Cheng, Paul J., 4,279,881, Cl. 423-456.000.
Reusser, Robert E., 4,279,621, Cl. 44-72.000.
Taylor, Raymond C., 4,279,607, Cl. 493-167.000.

Piarulli, Vincent J.: *See—*
Amorese, Franklyn J.; and Piarulli, Vincent J., 4,279,356, Cl. 220-314.000.

Picker Corporation: *See—*
Engdahl, Lawrence W.; and Deans, Allan J., 4,280,051, Cl. 250-363.00S.

Pierdeed Limited: *See—*
Sheppard, Elvin N., 4,279,679, Cl. 156-196.000.

Pieroh, Ernst A.: *See—*
Nusslein, Ludwig; Baumert, Dietrich; and Pieroh, Ernst A., 4,279,907, Cl. 424-248.510.

Piersol, Jay L., to Armstrong World Industries, Inc. Process for forming friction materials. 4,279,696, Cl. 162-146.000.

Pioneer Electronic Corporation: *See—*
Ishida, Kohji; and Numata, Tatsuo, 4,280,101, Cl. 329-167.000.

Pitney Bowes Inc.: *See—*
Eckert, Alton B.; Duwel, Edward C.; and Soderberg, John H., 4,280,180, Cl. 364-464.000.
Jones, Howell A., Jr.; and McFiggans, Robert B., 4,280,179, Cl. 364-464.000.

Pitts, Charles D.; and Pitts, David A. Coal burning system. 4,279,206, Cl. 110-263.000.

Pitts, David A.: *See—*
Pitts, Charles D.; and Pitts, David A., 4,279,206, Cl. 110-263.000.

Piwonda, Fridolin: *See—*
Flaig, Ulrich; Piwonda, Fridolin; Stumpp, Gerhard; and Wessel, Wolf, 4,279,235, Cl. 123-569.000.

Plastic Techniques, Inc.: *See—*
Moore, Richard D., 4,279,749, Cl. 210-330.000.

Plate, John R.; and Lucas, James H., to Allis-Chalmers Corporation. Mechanical detent for three speed power shift transmission. 4,279,334, Cl. 192-3.570.

Platone, Edoardo: *See—*
Prevedello, Aldo; Brunelli, Maurizio; and Platone, Edoardo, 4,279,834, Cl. 260-464.000.

Pleickhardt, George C., to Illinois Tool Works Inc. Fastener strip. 4,279,341, Cl. 206-345.000.

Plessey Handel und Investments AG: *See—*
Turley, Wilfred H.; and Robinson, John A., 4,279,468, Cl. 350-96.210.

Plumb, Edwin W. Safety device having machine drive cam control. 4,279,335, Cl. 192-134.000.

Podany, Vaclav O.: *See—*
Right, Robert W.; McCord, Herbert W.; and Podany, Vaclav O., 4,280,123, Cl. 340-384.00E.

Polakowski, David R.: *See—*
Brown, Leon C.; Fitts, Uscoe J.; and Polakowski, David R., 4,279,504, Cl. 355-72.000.

Polaroid Corporation: *See—*
Baker, Philip G.; Fitch, John K.; and Vance, Henry T., Jr., 4,279,487, Cl. 354-79.000.
Bilofsky, Ruth C.; and Nestle, Mara O., 4,279,983, Cl. 430-228.000.
Cocco, Vincent L.; Norris, Philip R.; and Wareham, Richard R., 4,279,503, Cl. 355-45.000.
Elchinger, Gilbert M., 4,280,204, Cl. 367-116.000.
Silver, Bruce R., 4,280,152, Cl. 360-61.000.

Pollock, David C. I., to C-I-L Inc. Means for separation of gas and solids from waste mixed liquor. 4,279,754, Cl. 210-608.000.

Ponce, Fernando A.: *See—*
Scifres, Donald R.; Ponce, Fernando A.; Connell, G. A. Neville; and Streifer, William, 4,280,107, Cl. 331-94.50H.

Ponticello, Gerald S.: *See—*
Baldwin, John J.; and Ponticello, Gerald S., 4,279,913, Cl. 424-258.000.

Popov, Sergei S.: *See—*
Medovar, Boris I.; Baglai, Vitaly M.; Us, Vasily I.; Bogachenko, Alexei G.; Timashov, Grigory A.; Fedorovsky, Boris B.; Bondarenko, Oleg P.; Shtanko, Jury P.; Artamonov, Viktor L.; Pavlov, Leonid V.; Eltsov, Konstantin S.; Stetsenko, Nikolai V.; Kaganovsky, Gary P.; Korotkov, Albert N.; and Popov, Sergei S., 4,279,642, Cl. 75-10.00C.

Poppinga, Bonno, to Robert Bosch GmbH. Multistage transistor amplifier. 4,280,103, Cl. 330-290.000.

Portinari, Antonio; and Longoni, Sergio, to Industrie Pirelli Societa per Azioni. Optical cable elements. 4,279,470, Cl. 350-96.230.

Pospelov, Boris S.; Bendersky, Alexandr F.; Kolesov, Jury A.; Nefediev, Yakov N.; Levkovich, Mikhail I.; and Asinovsky, Eduard N. Device for measuring angular position of a gear in a digital ignition system of an internal combustion engine. 4,280,165, Cl. 361-236.000.

Post, Larry K.: *See—*
Culbertson, Billy M.; and Post, Larry K., 4,279,833, Cl. 260-464.000.

Poston, Billy R.: *See—*
Gordy, Robert S.; Poston, Billy R.; and Sanders, David E., 4,280,218, Cl. 371-6.000.

Pott, Gerard T.; and Stuiver, Johannes C. M., to Shell Oil Company. Process for the preparation of a sulphided fluorine-containing nickel-tungsten catalyst for the conversion of hydrocarbons. 4,279,778, Cl. 252-439.000.

Potter, Bronson. Flashlight and signalling apparatus. 4,280,168, Cl. 362-35.000.

Pottorff, Donald R.; and Galmiche, Rene G., to Walter Kidde & Company, Inc. Double-acting disc brake. 4,279,330, Cl. 188-71.700.

Powell, J. Laurence; and Powell, Richard A. Vibrometer. 4,279,159, Cl. 73-651.000.

Powell, Richard A.: *See—*
Powell, J. Laurence; and Powell, Richard A., 4,279,159, Cl. 73-651.000.

Powers, Robert W.; and Bielawski, John C., to General Electric Company. Electroforming composite beta, mainly beta''-alumina articles. 4,279,725, Cl. 204-181.00F.

PPG Industries, Inc.: *See—*
Lord, Tom J.; and Snyder, William V., 4,279,071, Cl. 29-717.000.

Prater, Perry: *See—*
Wymer, Robert L.; and Prater, Perry, 4,279,628, Cl. 55-238.000.

Prechter, Heinz C.; and Kaltz, Milton C., to American Sunroof Corporation. Air deflector and pivotable roof vent panel apparatus for vehicle roofs. 4,279,441, Cl. 296-218.000.

Pregnall, Lester W. Versatile helmsman chair for a yacht. 4,279,398, Cl. 248-405.000.

Prestidge, Ross L.: *See—*
Hearn, Milton T. W.; and Prestidge, Ross L., 4,279,724, Cl. 204-180.00G.

Prevedello, Aldo; Brunelli, Maurizio; and Platone, Edoardo, to Anic S.p.A. Method for synthesizing dinitriles, products obtained thereby and their derivatives. 4,279,834, Cl. 260-464.000.

PRF Corporation: *See—*
Vitale, Joseph, 4,279,045, Cl. 5-497.000.

Price, Barry J.; Clitherow, John W.; and Bradshaw, John, to Allen & Hanburys Ltd. Aminoalkyl furan derivatives. 4,279,819, Cl. 260-326.50S.

Price, Barry J.: *See—*
Martin-Smith, Michael; Price, Barry J.; Bradshaw, John; and Clitherow, John W., 4,279,911, Cl. 424-251.000.

Price, Gene R.: *See—*
Leniger, David J., 4,279,128, Cl. 62-238.600.

Price, James B.: *See—*
Goldman, Jon C.; McMillan, Larry D.; and Price, James B., 4,279,947, Cl. 427-255.200.

Priestley, Anthony J.: *See—*
Weiss, Donald E.; Kolarik, Luis O.; Priestley, Anthony J.; and Anderson, Nevil J., 4,279,756, Cl. 210-667.000.

Prince, George T.: *See—*
Breed, Michal A.; and Prince, George T., 4,279,175, Cl. 74-473.00R.

Princevalle, Peter. Heat absorbing and radiating device for electric stoves. 4,280,044, Cl. 219-462.000.

Pringle, William L., to United States Steel Corporation. Constant velocity joint. 4,279,131, Cl. 64-21.000.

Prochazka, Svante: *See—*
Greskovich, Charles D.; Prochazka, Svante; and Palm, John A., 4,279,656, Cl. 106-73.500.

Procter & Gamble Co., The: *See—*
Strobel, Rudolf G. K.; and Eich, Richard A., 4,279,937, Cl. 426-424.000.

Produits Chimiques Ugine Kuhlmann: *See—*
Giet, Claude, 4,279,880, Cl. 423-445.000.

Propst, Robert L., to Herman Miller, Inc. Lightweight stackable pallet. 4,279,204, Cl. 108-53.300.

Propst, Robert L.; Randolph, Travis M.; and Reyda, Theodore M., to Herman Miller, Inc. Combination acoustic conditioner and light fixture. 4,280,019, Cl. 179-1.50M.

Prunenec, Paul: *See—*
Bretaudiere, Jean-Pierre; and Prunenec, Paul, 4,279,862, Cl. 422-72.000.

Pulliam, William D. Cleaning apparatus. 4,279,263, Cl. 134-111.000.

Pullman Incorporated: *See—*
Marulic, Walter J., 4,279,203, Cl. 105-321.000.

Puma, Bernard: *See—*
Sisoler, Gabriel M.; Spade, Vincent L.; Sowman, James P.; Casterwiler, Larry J.; and Puma, Bernard, 4,279,634, Cl. 65-182.300.

Pungas, Toom A. Reference voltage source. 4,280,088, Cl. 323-304.000.

Pursell, Grant W. Dispensing of hygienic fluids. 4,279,362, Cl. 222-94.000.

Pyle, Donald L. Dual tractor road grader with double arched center frame. 4,279,312, Cl. 172-789.000.

R. J. Harvey Instruments Corp.: *See—*
Maines, Robert Q., 4,279,506, Cl. 356-39.000.

Rackley, Robert L.: *See—*
Payne, Robert H.; and Rackley, Robert L., 4,279,053, Cl. 15-159.00A.

Ralph M. Parsons Company: *See—*
Beavon, David K., 4,279,882, Cl. 423-574.00R.

Ralston Purina Company: *See—*
Cho, Iue C., 4,279,939, Cl. 426-583.000.

Ramey, Raymond W. Hydraulic propulsion unit. 4,279,548, Cl. 405-283.000.

Ramirez, Peter R.; and Canterbury, Bradford, to American Optical Corporation. Apparatus and method for making cast ophthalmic lenses. 4,279,401, Cl. 249-139.000.

Ramm, Peter J.: *See—*
Ager, Ian R.; and Ramm, Peter J., 4,279,912, Cl. 424-258.000.

Rampf, Karl: *See—*
Schmucker, Erwin; and Rampf, Karl, 4,279,399, Cl. 249-2.000.

Rampf KG Formen GmbH & Co.: *See—*
Schmucker, Erwin; and Rampf, Karl, 4,279,399, Cl. 249-2.000.

Ramsey Engineering Company: *See—*
Erb, Tom L.; and Miller, Wendell D., 4,279,167, Cl. 73-861.250.

Randall, John J., Jr.: *See—*
Arora, Mulk A.; and Randall, John J., Jr., 4,279,714, Cl. 204-129.900.
Arora, Mulk A.; Randall, John J., Jr.; and Bernard, Walter J., 4,279,715, Cl. 204-129.900.

Randolph, Travis M.: *See—*
Propst, Robert L.; Randolph, Travis M.; and Reyda, Theodore M., 4,280,019, Cl. 179-1.50M.

Rank Organisation Limited, The: *See—*
Barnett, Roger C.; Sharpless, Robert G.; and Mossman, Colin F., 4,279,685, Cl. 156-509.000.

Ransom, Dennis K.: *See—*
Reese, Max G.; Ransom, Dennis K.; and Johnson, LaVell R., 4,279,885, Cl. 424-1.000.

Ransom, Stephen A.; Hohmann, Jere W.; and Nahmias, Clement, to Solid State Scientific, Inc. Multiplexing system for a solid state timing device. 4,280,212, Cl. 368-82.000.

Rasmussen, Elisabeth L.: *See—*
Felsvang, Karsten S.; Hansen, Ove E.; and Rasmussen, Elisabeth L., 4,279,873, Cl. 423-242.000.

Rathjen, Arthur H.: *See—*
Lee, Denis C.; and Rathjen, Arthur H., 4,279,259, Cl. 128-774.000.

Rattlingourd, Glen D., to Sperry Corporation. Digital timing recovery system. 4,280,099, Cl. 328-63.000.

Raytheon Company: *See—*
Lowenschuss, Oscar; and Gordon, Bruce E., 4,280,219, Cl. 375-4.000.
Steele, S. Robert, 4,279,670, Cl. 148-175.000.

RCA Corporation: *See—*
Abrahams, Marvin S.; and Blanc, Joseph, 4,279,688, Cl. 156-613.000.
Christopher, Todd J., 4,280,023, Cl. 369-43.000.
Dholakia, Anil R., 4,280,024, Cl. 369-219.000.
Packer, Marvin, 4,279,073, Cl. 29-832.000.
Rockett, Leonard R., Jr., 4,280,191, Cl. 364-807.000.
Villanyi, Sigmund T., 4,280,077, Cl. 313-402.000.

Reactive Metals & Alloys Corporation: *See—*
Jackman, Joseph R., 4,279,643, Cl. 75-58.000.
Jackman, Joseph R.; and Hanna, Wayne E., 4,279,650, Cl. 75-175.500.

Reba, Imants, to Crown Zellerbach Corporation. Cross-lapped web forming system. 4,279,610, Cl. 493-411.000.

Redken Laboratories, Inc.: *See—*
Tyson, Don R., 4,279,482, Cl. 353-65.000.

Reese, Edmund A.; White, Lionel S., Jr.; and McAlexander, Joseph C., III, to Texas Instruments Incorporated. Balanced input buffer circuit for semiconductor memory. 4,280,070, Cl. 307-279.000.

Reese, Max G.; Ransom, Dennis K.; and Johnson, LaVell R., to Becton Dickinson & Company. Solid phase assay. 4,279,885, Cl. 424-1.000.

Reflek Products, Incorporated: *See—*
Rigutto, Martin A., 4,279,594, Cl. 433-31.000.

Reflexite Corporation: *See—*
Rowland, William P., 4,279,471, Cl. 350-103.000.

Regie Nationale des Usines Renault: *See—*
Aubert, Paul, 4,279,268, Cl. 137-115.000.

Reichhold Chemicals, Incorporated: *See—*
Heller, David S., 4,279,964, Cl. 428-496.000.

Reijnhout, Cornelis M.: *See—*
Haes, Freddy; Hermes, Guillaume M. P. G.; and Reijnhout, Cornelis M., 4,279,253, Cl. 128-355.000.

Reisberg, Joseph: *See—*
Knapp, Randolph H.; Lawson, Jimmie B.; Reisberg, Joseph; Thigpen, David R.; and Hill, Harold J., 4,279,305, Cl. 166-307.000.

Relle, Zsuzsa: *See*—
Jovanovics, Karola; Szasz, Kalman; Kellner, Bela; Nemeth, Laszlo; Relle, Zsuzsa; Bittner, Emil; Dezseri, Eszter; and Eles, Janos, 4,279,816, Cl. 260-244.400.
Jovanovics, Karola; Szasz, Kalman; Kellner, Bela; Nemeth, Laszlo; Relle, Zsuzsa; Bittner, Emil; Deszeri, Eszter; and Eles, Janos, 4,279,915, Cl. 424-262.000.
Jovanovics, Karola; Szasz, Kalman; Kellner, Bela; Nemeth, Laszlo; Relle, Zsuzsa; Bittner, Emil; Deszeri, Eszter; and Eles, Janos, 4,279,916, Cl. 424-262.000.

Remery, George F. M., to Single Buoy Moorings, Inc. Device for conveying a medium from means provided in a fixed position on a bottom below the water surface to a buoy body. 4,279,543, Cl. 405-195.000.

Renshaw, Governor K. Protective shield for arthrograms. 4,280,056, Cl. 250-515.000.

Research Foundation of the City University of New York: *See*—
Engel, Robert R.; Sarin, Virender K.; Gotlinksy, Barry; Tropp, Burton E.; and Parker, Thomas S., 4,279,898, Cl. 424-217.000.

Research Institute for Iron, Steel and Other Metals of the Tohoku University, The: *See*—
Hirai, Toshio; and Niihara, Koichi, 4,279,689, Cl. 156-614.000.

Restivo, Edward A. Portable spotting tool for carpets. 4,279,057, Cl. 15-415.00R.

Reuland, Joachim; and Dahlgrun, Rolf, to Hauni-Werke Korber & Co. KG. Method and apparatus for pinpointing the causes of malfunction of machines for the manufacture and/or processing of cigarettes or the like. 4,280,187, Cl. 364-552.000.

Reusser, Robert E., to Phillips Petroleum Company. Polyamines mixture for stabilizing certain hydrocarbons against oxidation. 4,279,621, Cl. 44-72.000.

Rex Industries Co., Ltd.: *See*—
Miyagawa, Fumiko; Ikenaka, Yoshiharu; and Sakaguchi, Makoto, 4,279,182, Cl. 82-28.00R.

Reyda, Theodore M.: *See*—
Propst, Robert L.; Randolph, Travis M.; and Reyda, Theodore M., 4,280,019, Cl. 179-1.50M.

Reynaud, Bernard: *See*—
Berger, Jean-Yves; Kostelitz, Michel; Reynaud, Bernard; and Egee, Raymond, 4,280,042, Cl. 219-121.0PT.

Reynolds Metals Company: *See*—
Holloway, Fred W., Jr., 4,279,344, Cl. 206-631.000.

Reynolds, Thomas G.: *See*—
Tanka, David M.; and Reynolds, Thomas G., 4,280,162, Cl. 361-45.000.

Rezanka, Ivan; and Lindblad, Nero R., to Xerox Corporation. Electrophotographic cleaning apparatus. 4,279,499, Cl. 355-15.000.

Rhone-Poulenc Industries: *See*—
Joubert, Daniel; and Vrisakis, Georges, 4,279,766, Cl. 252-174.250.

Ri-El Richerche Eiettroniche S.p.A.: *See*—
Righi, Nardino; and Ferrari, Mario C., 4,279,170, Cl. 74-10.330.

Ricci, Giorgio, to Biodata S.p.A. Means for accelerating precipitation in immunoassay and immunoassay method. 4,279,999, Cl. 435-183.000.

Richter Gedeon Vegyeszeti Gyar Rt.: *See*—
Jovanovics, Karola; Szasz, Kalman; Kellner, Bela; Nemeth, Laszlo; Relle, Zsuzsa; Bittner, Emil; Deszeri, Eszter; and Eles, Janos, 4,279,915, Cl. 424-262.000.
Jovanovics, Karola; Szasz, Kalman; Kellner, Bela; Nemeth, Laszlo; Relle, Zsuzsa; Bittner, Emil; Deszeri, Eszter; and Eles, Janos, 4,279,916, Cl. 424-262.000.

Richter Gedeon Vegyszeti Gyar Rt.: *See*—
Jovanovics, Karola; Szasz, Kalman; Kellner, Bela; Nemeth, Laszlo; Relle, Zsuzsa; Bittner, Emil; Dezseri, Eszter; and Eles, Janos, 4,279,816, Cl. 260-244.400.

Ricoh Company, Ltd.: *See*—
Eda, Tadahiro; Tatsumi, Susumu; Imai, Chikara; and Koichi, Yasushi, 4,279,498, Cl. 355-14.00D.
Kojima, Kenji; Ota, Sakae; Katsumata, Akio; Kameyama, Toshiaki; Watanabe, Toshio; and Koike, Tadao, 4,279,501, Cl. 355-15.000.
Ohta, Masafumi; Sakai, Kiyoshi; Hashimoto, Mitsuru; Kozima, Akio; and Sasaki, Masaomi, 4,279,981, Cl. 430-73.000.
Satomi, Toyokazu, 4,279,497, Cl. 355-8.000.

Riedel, Tilo, to S. A. Etablissements Francois Salomon & Fils. Ski brake. 4,279,434, Cl. 280-605.000.

Riesen, Peter, to Sulzer Brothers Limited. Laying-in comb for warp knitting machines. 4,279,133, Cl. 66-84.00R.

Riggs, Olen L., Jr., to Kerr-McGee Corporation. Process for oxidizing a metal of variable valence by constant current electrolysis. 4,279,705, Cl. 204-1.500.

Righi, Nardino; and Ferrari, Mario C., to Ri-El Richerche Eiettroniche S.p.A. Pushbutton tuner. 4,279,170, Cl. 74-10.330.

Right, Robert W.; McCord, Herbert W.; and Podany, Vaclav O., to General Signal Corporation. Multitone signaling device. 4,280,123, Cl. 340-384.00E.

Rigutto, Martin A., to Reflek Products, Incorporated. Dental hand mirror. 4,279,594, Cl. 433-31.000.

Riley, Harry J., to S. W. Hart & Co. Pty. Ltd. Method of attaching a solar collector plate to a tube water way. 4,279,066, Cl. 29-157.30C.

Riley, Richard L.; Douglas, George H.; and Yelnosky, John, to William H. Rorer, Inc. Method of lowering blood pressure. 4,279,928, Cl. 424-324.000.

Ringel, Helmut; Zimmer, Erich; and Abdelmonem, Nabil, to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung. Method of producing weakly acidic cation exchange resin particles charged with uranyl ions. 4,279,866, Cl. 423-7.000.

Ringle, Terry W., to International Business Machines Corporation. Power recovery apparatus for an electric typewriter. 4,279,523, Cl. 400-279.000.

Rite Autotronics Corporation: *See*—
Schwartz, Edwin L.; and Robson, George E., 4,279,355, Cl. 220-300.000.

Ritter, Allen M.: *See*—
Dinger, Edward H.; and Ritter, Allen M., 4,280,081, Cl. 318-6.000.

Rivette, Denni F.; Meyer, Burton C.; and Nix, Donald F., to Marvin Glass & Associates. Sounding toy. 4,279,100, Cl. 46-179.000.

Rizzello, Frank. Phonograph decoupling apparatus. 4,279,423, Cl. 369-247.000.

Roach, Jack W., to Kerr-McGee Refining Corporation. Process for separating bituminous materials. 4,279,739, Cl. 208-309.000.

Robert Bosch GmbH: *See*—
Arnold, Herbert; and Gerhards, Gerd, 4,279,229, Cl. 123-359.000.
Flaig, Ulrich; Piwonda, Fridolin; Stumpp, Gerhard; and Wessel, Wolf, 4,279,235, Cl. 123-569.000.
Jesse, Erich; and Leussink, Reinhard, 4,280,166, Cl. 361-253.000.
Kuhn, Edgar; Kohl, Walter; and Schramm, Gunter, 4,280,161, Cl. 361-18.000.
Poppinga, Bonno, 4,280,103, Cl. 330-290.000.
Schuster, Gregor; Schmid, Johann; Schmuck, Erwin; and Rose, Klaus, 4,279,232, Cl. 123-516.000.
Straubel, Max; and Voit, Willi, 4,279,385, Cl. 239-90.000.
Wessel, Wolf; and Handtmann, Dieter, 4,279,146, Cl. 73-118.000.
Yotsumoto, Toshiyuki; Ujita, Tuginobu; and Shinohara, Eisaku, 4,279,324, Cl. 180-336.000.

Roberts, Cecil P.; and Ochs, Charles S., to Anchor Hocking Corporation. High speed straight line container sealing machine. 4,279,115, Cl. 53-314.000.

Robinson, John A.: *See*—
Turley, Wilfred H.; and Robinson, John A., 4,279,468, Cl. 350-96.210.

Robinson, Michael, to Laporte Industries Limited. Process for upgrading iron-containing materials. 4,279,640, Cl. 75-1.00R.

Robinson, William W. Garbage can assembly with lid anchoring means. 4,279,357, Cl. 220-318.000.

Robson, George E.: *See*—
Schwartz, Edwin L.; and Robson, George E., 4,279,355, Cl. 220-300.000.

Roccaforte, Harry I., to Champion International Corporation. Carton with unobtrusive hanging panel. 4,279,376, Cl. 229-38.000.

Rockett, Leonard R., Jr., to RCA Corporation. Quantizing circuits. 4,280,191, Cl. 364-807.000.

Rockwell International Corporation: *See*—
Beguwala, Moiz M. E.; and Erdmann, Francis M., 4,279,069, Cl. 29-571.000.

Rodarte, Jesse. Hand tool for use in sanding louver boards. 4,279,103, Cl. 51-389.000.

Roderick, John J.: *See*—
Allan, John L. H.; Finestone, Arnold B.; and Roderick, John J., 4,279,809, Cl. 260-45.95C.

Roethlein, Richard J.: *See*—
Breault, Richard D.; Goller, Glen J.; Roethlein, Richard J.; and Sprecher, Gilbert C., 4,279,970, Cl. 429-35.000.

Roettele, Donald L.; and Yohpe, William E., to ComGeneral Corporation. Radar detector. 4,280,223, Cl. 375-93.000.

Rogers, James B., to Dresser Industries, Inc. Method of making chain. 4,279,122, Cl. 59-10.000.

Rohlcke, Friedrich-Wilhelm. Wire supporting means for orthodontic purposes. 4,279,593, Cl. 433-8.000.

Rohm GmbH: *See*—
Hitzler, Otto; and Wunderlich, Winfried, 4,279,719, Cl. 204-159.230.

Rohm and Haas Company: *See*—
Falgiatore, Dominic R.; and Emmons, William D., 4,279,959, Cl. 428-288.000.
Lewis, Sheldon N.; Miller, George A.; and Law, Andrew B., 4,279,762, Cl. 252-47.500.

Rohrbach, Roger P.: *See*—
McClure, William F.; and Rohrbach, Roger P., 4,279,346, Cl. 209-582.000.

Roll Former Corporation: *See*—
Stellrecht, Ewald A., 4,279,211, Cl. 113-55.000.

Rolls-Royce Limited: *See*—
Avery, Peter, 4,279,575, Cl. 416-244.00A.
Gilkison, John J., 4,280,040, Cl. 219-104.000.

Roman Machine Co.: *See*—
Martin, Merritt W., Jr., 4,279,587, Cl. 425-531.000.

Ronning Engineering Company, Inc.: *See*—
Ronning, Richard L., 4,279,556, Cl. 414-218.000.

Ronning, Richard L., to Ronning Engineering Company, Inc. Auger airlock assembly having product cutting knife. 4,279,556, Cl. 414-218.000.

Roos, Ernst: *See*—
Jeblick, Werner; Roos, Ernst; Kempermann, Theo; and Abele, Manfred, 4,280,004, Cl. 521-89.000.

Roquette Freres: *See*—
Verwaerde, Francoise; Leleu, Jean-Bernard; and Huchette, Michel, 4,279,931, Cl. 426-48.000.

Rose, Donald K., to Hewlett-Packard Company. Planar and near planar magnetic bubble circuits. 4,280,195, Cl. 365-39.000.

Rose, Klaus: *See*—
Schuster, Gregor; Schmid, Johann; Schmuck, Erwin; and Rose, Klaus, 4,279,232, Cl. 123-516.000.

Rosenberg, Heinz J.: *See—*
Buchholz, Rainer; Zodrow, Rudolf; and Rosenberg, Heinz J., 4,279,687, Cl. 156-568.000.

Rosenblad, Gosta, to Generator Industri AB. Method of utilizing residual heat in the production of cellulose and an installation for carrying out the method. 4,279,126, Cl. 60-651.000.

Rosenkranz, Hans J.: *See—*
Schuster, Karl-Ernst; Rudolph, Hans; Mayer, Wolfram; and Rosenkranz, Hans J., 4,279,718, Cl. 204-159.150.

Rosenthal, Janice E.: *See—*
Dyer, Robert F.; Lewis, J. Stephen; Rosenthal, Janice E.; Mills-Winkler, James P.; and Schroeder, Robert F., 4,279,099, Cl. 46-119.000.

Ross, Haldon, to AMF Incorporated. Single lever 10-speed bicycle shifter. 4,279,174, Cl. 74-473.00P.

Rosser, William J. N.: *See—*
Stewart, Clive E. E.; Rosser, William J. N.; and Ansell, Martin P., 4,279,785, Cl. 252-518.000.

Roussel Uclaf: *See—*
Ager, Ian R.; and Ramm, Peter J., 4,279,912, Cl. 424-258.000.
Buendia, Jean; and Vivat, Michel, 4,279,919, Cl. 424-279.000.
Martel, Jacques; Tessier, Jean; and Demoute, Jean-Pierre, 4,279,835, Cl. 260-465.00D.

Rowland, William P., to Reflexite Corporation. Retroreflector for road surfaces. 4,279,471, Cl. 350-103.000.

RPC Corporation: *See—*
Appleman, William S., 4,279,347, Cl. 212-147.000.

RSV-Gusto Engineering B.V.: *See—*
de Werk, Karel J. C., 4,279,545, Cl. 405-211.000.

Rudkovsky, Alexandr D.: *See—*
Lyakhevich, Genrikh D.; Belkevich, Petr I.; Rudkovsky, Alexandr D.; Sokolovsky, Alexandr E.; and Kirilchik, Alexandr I., 4,279,865, Cl. 422-187.000.

Rudolph, Hans: *See—*
Schuster, Karl-Ernst; Rudolph, Hans; Mayer, Wolfram; and Rosenkranz, Hans J., 4,279,718, Cl. 204-159.150.

Ruf, Wolfgang: *See—*
Stemme, Otto; Wagensonner, Eduard; and Ruf, Wolfgang, 4,280,142, Cl. 358-214.000.

Rusch, Heinz, to Willy Rusch GmbH & Co. KG. Tube for enteral treatment. 4,279,251, Cl. 128-348.000.

Ruscoe, Michael J. H.; Sarkar, Kshitindra M.; and Clegg, Maurice A., to Sherritt Gordon Mines Limited. Coins and similarly disc-shaped articles. 4,279,968, Cl. 428-677.000.

Rush-Presbyterian-St. Luke's Medical Center: *See—*
Andriacchi, Thomas P.; Galante, Jorge O.; and Hampton, Steven J., 4,279,042, Cl. 3-1.913.

Ruston, Donald A.: *See—*
Campbell, James R.; and Anspach, Roy L., 4,280,039, Cl. 219-78.110.

Ruston, Donald Alan: *See—*
Campbell, James R.; and Anspach, Roy L., 4,280,039, Cl. 219-78.110.

Ruston, Gloria I.: *See—*
Campbell, James R.; and Anspach, Roy L., 4,280,039, Cl. 219-78.110.

Ruston, Terri Lynn: *See—*
Campbell, James R.; and Anspach, Roy L., 4,280,039, Cl. 219-78.110.

Rutz, David A.: *See—*
Ryan, Edward J.; Rutz, David A.; and Lee, Jack W., 4,279,121, Cl. 57-258.000.

Ryan, Edward J.; Rutz, David A.; and Lee, Jack W., to United Technologies Corporation. Stranded nickel braze alloy preforms. 4,279,121, Cl. 57-258.000.

Rychlik, Alan F., executor: *See—*
Rychlik, Frank J., deceased; and Rychlik, Alan F., executor, 4,279,573, Cl. 417-53.000.

Rychlik, Frank J., deceased; and by Rychlik, Alan F., executor. High pressure pump. 4,279,573, Cl. 417-53.000.

Rydell, Edmund W. F. Machine for stacking panels. 4,279,555, Cl. 414-83.000.

Ryobi Ltd.: *See—*
Morimoto, Yoshinori, 4,279,387, Cl. 242-84.20G.

Rzeszewski, Theodore S., to Matsushita Electric Corporation of America. Phase locked loop system with improved acquisition. 4,280,104, Cl. 331-1.00A.

S. A. Etablissements Francois Salomon & Fils: *See—*
Riedel, Tilo, 4,279,434, Cl. 280-605.000.

S. Franzen Sohne (GmbH & Co.): *See—*
Milles, Peter, 4,279,136, Cl. 70-71.000.

S.S.O.S. Sub Sea Oil Services S.p.A.: *See—*
Santi, Giunio G., 4,280,183, Cl. 364-497.000.

S. W. Hart & Co. Pty. Ltd.: *See—*
Riley, Harry J., 4,279,066, Cl. 29-157.30C.

Sachs-Systemtechnik GmbH: *See—*
Brunken, Gerd; Eibl, Volker; and Fliege, Hans, 4,280,118, Cl. 340-147.0MD.

Sacks, Paul S.: *See—*
Cann, Peter L.; and Sacks, Paul S., 4,279,129, Cl. 62-278.000.

Sagaser, Thomas M.; and Mather, Joseph M., to Clark Equipment Company. Backhoe frame wedge mount. 4,279,566, Cl. 414-686.000.

Saito, Kiichi: *See—*
Ito, Naoya; Saito, Kiichi; Yoshida, Takeshi; Aoki, Masahiro; Okubo, Masao; and Miki, Masayoshi, 4,279,648, Cl. 75-128.00C.

Saito, Shunji: *See—*
Misumi, Akira; and Saito, Shunji, 4,279,784, Cl. 252-513.000.

Saito, Yukio; Sekiya, Koichi; Takahashi, Masaaki; and Akiyama, Seigo, to Sankyo Company Limited. Method for measuring blood coagulation and device therefor. 4,279,616, Cl. 23-230.00B.

Sakaguchi, Makoto: *See—*
Miyagawa, Fumiko; Ikenaka, Yoshiharu; and Sakaguchi, Makoto, 4,279,182, Cl. 82-28.00R.

Sakaguchi, Masayuki: *See—*
Ohta, Ryozo; Yoshizawa, Tadao; Sakaguchi, Masayuki; Hara, Yoshiaki; Kyomen, Junsuke; Yoneda, Ryuichi; and Enomoto, Hidekazu, 4,279,853, Cl. 264-230.000.

Sakai, Kiyoshi: *See—*
Ohta, Masafumi; Sakai, Kiyoshi; Hashimoto, Mitsuru; Kozima, Akio; and Sasaki, Masaomi, 4,279,981, Cl. 430-73.000.

Sakane, Toshio: *See—*
Tsunekawa, Tokuichi; Sakane, Toshio; and Taguchi, Tatsuya, 4,280,151, Cl. 360-33.000.

Sakoda, Shunsuke: *See—*
Kashima, Tsunehiro; Sakoda, Shunsuke; Tsuda, Hidetoshi; Hiramatsu, Tamihei; and Morita, Kazuyuki, 4,280,136, Cl. 358-93.000.

Sam's Well Service, Inc.: *See—*
Levy, Robert M.; and Matire, P. Jeffrey, 4,279,600, Cl. 434-219.000.

Sanchez, Moises G.; Ernest, Michael V.; and Laine, Norman R., to W. R. Grace & Co. Spheroidal alumina particles and catalysts employing the particles as a support. 4,279,779, Cl. 252-448.000.

Sanchez, Moises G.: *See—*
Hill, Richard N.; and Sanchez, Moises G., 4,279,877, Cl. 423-321.00R.

Sanda, Masaaki: *See—*
Koiso, Kazuhiro; Sanda, Masaaki; Hayashi, Mamoru; and Uesugi, Hiroaki, 4,279,454, Cl. 312-297.000.

Sanders, David E.: *See—*
Gordy, Robert S.; Poston, Billy R.; and Sanders, David E., 4,280,218, Cl. 371-6.000.

Sandvik Conveyor GmbH: *See—*
Froeschke, Reinhard, 4,279,579, Cl. 425-6.000.

Sangamo Weston, Inc.: *See—*
Tucker, Billy J., 4,279,513, Cl. 356-387.000.

Sankyo Company Limited: *See—*
Jojima, Teruomi; Takeshiba, Hideo; and Takahi, Yukiyoshi, 4,279,908, Cl. 424-248.550.
Saito, Yukio; Sekiya, Koichi; Takahashi, Masaaki; and Akiyama, Seigo, 4,279,616, Cl. 23-230.00B.

Sano, Shinichi: *See—*
Yamaguchi, Keiki; and Sano, Shinichi, 4,280,064, Cl. 307-149.000.

Santi, Giunio G., to S.S.O.S. Sub Sea Oil Services S.p.A. Gas analyzer. 4,280,183, Cl. 364-497.000.

Santo, Philip J. Flexible sheet securing apparatus. 4,279,061, Cl. 24-72.500.

Santo, Philip J. Drawer assembly. 4,279,455, Cl. 312-330.00R.

Sarin, Virender K.: *See—*
Engel, Robert R.; Sarin, Virender K.; Gotlinksy, Barry; Tropp, Burton E.; and Parker, Thomas S., 4,279,898, Cl. 424-217.000.

Sarkar, Kshitindra M.: *See—*
Ruscoe, Michael J. H.; Sarkar, Kshitindra M.; and Clegg, Maurice A., 4,279,968, Cl. 428-677.000.

Sasaki, Masaomi: *See—*
Ohta, Masafumi; Sakai, Kiyoshi; Hashimoto, Mitsuru; Kozima, Akio; and Sasaki, Masaomi, 4,279,981, Cl. 430-73.000.

Sasaki, Takashi: *See—*
Ogi, Keiji; Sasaki, Takashi; and Tosaka, Yasuo, 4,279,987, Cl. 430-409.000.

Sasaki, Toshio: *See—*
Minato, Osamu; Masuhara, Toshiaki; Sasaki, Toshio; and Kubo, Masaharu, 4,280,065, Cl. 307-473.000.
Shiga, Akinobu; Fukui, Yoshiharu; Hanji, Katsumi; Sasaki, Toshio; Okawa, Masahisa; Matsuura, Hideaki; and Yamada, Yasuharu, 4,279,776, Cl. 252-429.00B.

Satake Engineering Co., Ltd.: *See—*
Satake, Toshihiko, 4,279,261, Cl. 130-5.00B.

Satake, Toshihiko, to Satake Engineering Co., Ltd. Automatic safety device for hulling machine. 4,279,261, Cl. 130-5.00B.

Sato, Akira: *See—*
Ashida, Eiji; Nihei, Masayasu; Wachi, Hiroshi; Sato, Akira; and Kokura, Satoshi, 4,280,137, Cl. 358-101.000.
Wakana, Hiroshi; Yamada, Shigeru; and Sato, Akira, 4,279,966, Cl. 428-595.000.

Sato, Fumio: *See—*
Hamagami, Teruaki; Maetani, Kazuo; and Sato, Fumio, 4,279,682, Cl. 156-367.000.

Sato, Hideo: *See—*
Inukai, Takashi; Inoue, Hiromichi; Furukawa, Kenji; Sato, Hideo; and Sugimori, Shigeru, 4,279,770, Cl. 252-299.620.

Sato, Shigeru: *See—*
Iwasaki, Masayuki; Nagashima, Akira; and Sato, Shigeru, 4,279,982, Cl. 430-170.000.

Sato, Susumu: *See—*
Okamoto, Toshihiko; Isogai, Yo; Shudo, Koichi; and Takahashi, Soshiro, 4,279,639, Cl. 71-94.000.

Satoh, Hiroshi: *See—*
Ishida, Nakao; Satoh, Hiroshi; Suzuki, Fujio; and Miyao, Kouhei, 4,279,892, Cl. 424-85.000.

Satoh, Hitoshi; and Kosaka, Shohei, to Chlorine Engineers Corporation, Ltd. Method for electrolyzing hydrochloric acid. 4,279,712, Cl. 204-128.000.

Satoh, Satoru, to Jidosha Kiki Co., Ltd. Tandem type power servo booster. 4,279,193, Cl. 91-376.00R.
Satomi, Toyokazu, to Ricoh Company, Ltd. Electrostatic copying machine. 4,279,497, Cl. 355-8.000.
Saunders, Bobbie L. Transfer stand. 4,279,043, Cl. 5-81.00R.
Saunders, Jimmy G.: *See*—
Baun, Kenneth W.; and Saunders, Jimmy G., 4,280,193, Cl. 364-900.000.
Sawada, Kazuo, to Sumitomo Electric Industries, Ltd. Soft copper alloy conductors and their method of manufacture. 4,279,967, Cl. 428-647.000.
Sawada, Satoru: *See*—
Aoki, Kozo; Furutachi, Nobuo; and Sawada, Satoru, 4,279,990, Cl. 430-551.000.
Sawoska, David A.: *See*—
Kukanskis, Peter E.; Grunwald, John J.; Ferrier, Donald R.; and Sawoska, David A., 4,279,948, Cl. 427-305.000.
Saxena, Arjun N. Audio recording apparatus and method. 4,280,148, Cl. 360-13.000.
Saxton, Dennis M., to FXC Corporation. Adjustable time-delayed apparatus for opening a parachute. 4,279,392, Cl. 244-150.000.
Schaefer, Hartmann: *See*—
Eistetter, Klaus; Schaefer, Hartmann; and Menge, Heinz G., 4,279,918, Cl. 424-274.000.
Schafer, Gerhard, to Fritz Schafer GmbH. Apparatus for spraying workpieces and intercepting overspray. 4,279,215, Cl. 118-326.000.
Schall, Herman H.: *See*—
Leiter, Gordon A.; and Schall, Herman H., 4,280,030, Cl. 200-237.000.
Schallner, Otto; and Hamprecht, Rainer, to Bayer Aktiengesellschaft. Aqueous process for the preparation of aromatic phosphorus compounds. 4,279,813, Cl. 260-163.000.
Scharwaechter, Peter: *See*—
Gutsche, Klaus; Scharwaechter, Peter; Kohlmann, Wilhelm; and Kroemer, Gerd, 4,279,899, Cl. 424-229.000.
Scheibitz, Wolfgang: *See*—
Schrodter, Klaus; Gradl, Reinhard; Ehlers, Klaus-Peter; and Scheibitz, Wolfgang, 4,279,876, Cl. 423-305.000.
Scheicher, Hans M. F. Dental half-implants. 4,279,598, Cl. 433-173.000.
Schering Aktiengesellschaft: *See*—
Nusslein, Ludwig; Baumert, Dietrich; and Pieroh, Ernst A., 4,279,907, Cl. 424-248.510.
Schering Corporation: *See*—
Ganguly, Ashit K.; and Liu, Yi-Tsung, 4,279,896, Cl. 424-180.000.
Scheubeck, Egmont; Blazevic, Gertrud; and Boehner, Marianne, to Siemens Aktiengesellschaft. Device for measuring the emission of gaseous inorganic fluorine or chlorine compounds. 4,279,727, Cl. 204-195.00R.
Schevey, William R.; Weslowski, Robert G.; and Morentz, John D., to Allied Chemical Corporation. Filling machine and method for low particulate chemicals. 4,279,279, Cl. 141-5.000.
Schick, George E.: *See*—
Campbell, James R.; and Anspach, Roy L., 4,280,039, Cl. 219-78.110.
Schindehutte, Manfred: *See*—
Dieling, Hans; and Schindehutte, Manfred, 4,279,202, Cl. 105-206.00R.
Schink, Richard R.; and Craig, Thomas A., to Milwaukee Cylinder Corporation. Liquid flow control means for gas-liquid receptacle. 4,279,269, Cl. 137-206.000.
Schlig, Eugene S., to International Business Machines Corporation. Multiple access store. 4,280,197, Cl. 365-154.000.
Schlossberg, Howard R. Remote pointing system. 4,280,135, Cl. 358-93.000.
Schmalbach Lubeca GmbH: *See*—
Bode, Gunter, 4,279,114, Cl. 53-314.000.
Schmid, Johann: *See*—
Schuster, Gregor; Schmid, Johann; Schmuck, Erwin; and Rose, Klaus, 4,279,232, Cl. 123-516.000.
Schmidhauser, Rolf, to LGZ Landis & Gyr Zug AG. Apparatus for cashless payment of merchandise or services. 4,280,037, Cl. 235-454.000.
Schmidt, Manfred: *See*—
Ivanov, Rumen V.; Nikolov, Dobrin V.; Bilsing, Ulrich; Weber, Heinz; and Schmidt, Manfred, 4,279,742, Cl. 209-166.000.
Schmitz, Fernand, to ARBED Acieries Reunies de Burbach-Eich-Dudelange, Societe Anonyme. Method of rolling angle structural shapes. 4,279,139, Cl. 72-234.000.
Schmitz, Reinold, to Bayer Aktiengesellschaft. Process for the preparation of 1,4-diaminoanthraquinone-2,3-disulphonic acid. 4,279,825, Cl. 260-371.000.
Schmuck, Erwin: *See*—
Schuster, Gregor; Schmid, Johann; Schmuck, Erwin; and Rose, Klaus, 4,279,232, Cl. 123-516.000.
Schmucker, Erwin; and Rampf, Karl, to Rampf KG Formen GmbH & Co. Concrete beam molding apparatus. 4,279,399, Cl. 249-2.000.
Schneider, Franz; Schumann, Burkhard; Maier, Karl; and Hohn, Herbert, to L. Schuler GmbH. Workpiece conveyor device for an automated press line. 4,279,561, Cl. 414-591.000.
Schneider, Randy G.: *See*—
Lord, Herbert A.; and Schneider, Randy G., 4,279,851, Cl. 264-174.000.
Schnoes, Heinrich K.: *See*—
DeLuca, Hector F.; Schnoes, Heinrich K.; Tanaka, Yoko; and Wichmann, Joseph K., 4,279,826, Cl. 260-397.200.
Schnurr, Lewis E., to Essex County Council. Radio telephone system with direct digital carrier modulation for data transmission. 4,280,020, Cl. 179-2.0EA.
Schoellkopf, Ulrich; Hausberg, Hans-Heinrich; Boell, Walter; May, Hans-Joachim; and Koenig, Horst, to BASF Aktiengesellschaft. Chirally substituted 2-imidazolin-5-ones. 4,280,008, Cl. 548-301.000.
Schoen, Bernd-Jurgen: *See*—
Bruckner, Georg F.; Geike, Bernd; Schoen, Bernd-Jurgen; and Berger, Fritz, 4,279,038, Cl. 2-425.000.
Schomberg, Hermann; and Tasto, Manfred, to U.S. Philips Corporation. Method of and device for determining the internal structure of a body by means of acoustic beams. 4,279,157, Cl. 73-618.000.
Schorr, Herbert; and Waldawsky-Berger, Irving, to International Business Machines Corporation. Implicit address structure and method for accessing an associative memory device. 4,280,177, Cl. 364-200.000.
Schott, Wilhelm, to Jean Walterscheid GmbH. Coupling hook. 4,279,431, Cl. 280-508.000.
Schramm, Gunter: *See*—
Kuhn, Edgar; Kohl, Walter; and Schramm, Gunter, 4,280,161, Cl. 361-18.000.
Schremp, Edward J. System for extracting subsurface wave energy. 4,279,124, Cl. 60-505.000.
Schrier, Melvin. Vision screening kit. 4,279,479, Cl. 351-37.000.
Schrodter, Klaus; Gradl, Reinhard; Ehlers, Klaus-Peter; and Scheibitz, Wolfgang, to Hoechst Aktiengesellschaft. Conversion of extraction residues originating from phosphoric acid decontamination to solid deposition products. 4,279,876, Cl. 423-305.000.
Schrodter, Klaus: *See*—
Maurer, Alexander; Schrodter, Klaus; and Heymer, Gero, 4,279,878, Cl. 423-321.00R.
Schroeder, Robert F.: *See*—
Dyer, Robert F.; Lewis, J. Stephen; Rosenthal, Janice E.; Mills-Winkler, James P.; and Schroeder, Robert F., 4,279,099, Cl. 46-119.000.
Schulten, Rudolf: *See*—
Overhoff, Theodor; Schulten, Rudolf; Singh, Jasbir; Sylvester, Gerd; and Witte, Josef, 4,279,697, Cl. 176-22.000.
Schulze, Hans; Walz, Klaus; Jakobs, Karlhans; and Boehmke, Gunther, to Bayer Aktiengesellschaft. Process for dyeing polyester-containing materials. 4,279,614, Cl. 8-533.000.
Schumann, Burkhard: *See*—
Schneider, Franz; Schumann, Burkhard; Maier, Karl; and Hohn, Herbert, 4,279,561, Cl. 414-591.000.
Schuster, Gregor; Schmid, Johann; Schmuck, Erwin; and Rose, Klaus, to Robert Bosch GmbH. Fuel system for internal combustion engines. 4,279,232, Cl. 123-516.000.
Schuster, Karl-Ernst; Rudolph, Hans; Mayer, Wolfram; and Rosenkranz, Hans J., to Bayer Aktiengesellschaft. Aryl-glyoxyloyloxyalkylacrylates and their use in photopolymerizable binders. 4,279,718, Cl. 204-159.150.
Schwabe, Thomas M.: *See*—
Bushmeyer, Richard W.; and Schwabe, Thomas M., 4,279,446, Cl. 301-20.000.
Schwartz, Edwin L.; and Robson, George E., to Rite Autotronics Corporation. Twist-lock container. 4,279,355, Cl. 220-300.000.
Schwarz, Frederick M.: *See*—
Griffin, James G.; and Schwarz, Frederick M., 4,279,123, Cl. 60-226.00R.
Schwenke, Dieter: *See*—
von Wichert, Nils; and Schwenke, Dieter, 4,279,609, Cl. 493-276.000.
Scifres, Donald R.; Burnham, Robert D.; and Streifer, William, to Xerox Corporation. Striped substrate planar laser. 4,280,106, Cl. 331-94.50H.
Scifres, Donald R.; Ponce, Fernando A.; Connell, G. A. Neville; and Streifer, William, to Xerox Corporation. Apertured and unapertured reflector structures for electroluminescent devices. 4,280,107, Cl. 331-94.50H.
Scifres, Donald R.; Burnham, Robert D.; and Streifer, William, to Xerox Corporation. Transverse junction array laser. 4,280,108, Cl. 331-94.50H.
SCM (Canada) Limited: *See*—
McMullan, Robert G., 4,279,526, Cl. 401-97.000.
SCM Corporation: *See*—
Bonsack, James P., 4,279,871, Cl. 423-74.000.
Scott, Jack A.: *See*—
Vining, Paul H.; Scott, Jack A.; and Duby, Paul F., 4,279,711, Cl. 204-105.00R.
Scott, John C.; and McClure, Robert I., to Memorex Mini Disc Drive Corp. Method of improving air flow in compact disc drive. 4,280,155, Cl. 360-98.000.
Scott, Robert D. Acoustic coupling free electric drum. 4,279,188, Cl. 84-1.140.
Searle, Robert J. G.: *See*—
Day, Janet A.; Devlin, Barry R. J.; and Searle, Robert J. G., 4,279,821, Cl. 260-326.270.
Seger, Fritz O., to Copes-Vulcan, Inc. Fluid control device with disc-type flow restrictor. 4,279,274, Cl. 138-42.000.
Seidenfaden, Heinz, to Vereinigte Flugtechnische Werke-Fokker GmbH. Tool for deburring, chamfering, trimming, and removing edges of workpieces. 4,279,554, Cl. 409-180.000.
Seidenschnur, Dieter: *See*—
Vente, Paul; Seidenschnur, Dieter; Knipp, Ulrich; and Spenner, Anton, 4,279,856, Cl. 264-313.000.

Seissan Nippon-Sha K. K.: *See—*
Takahashi, Katsuhito, 4,279,677, Cl. 156-160.000.

Seiwa Kasei Co., Ltd.: *See—*
Yoshioka, Issei; and Kamimura, Yoichi, 4,279,996, Cl. 435-69.000.

Sekiguchi, Koichi; Takematsu, Hikaru; and Tatsukura, Kazutada, to Iwasaki Tsushinki Kabushiki Kaisha. Key telephone systems. 4,280,022, Cl. 179-99.00A.

Sekiguchi, Mitsuo, to Alps Electric Co., Ltd. Filter for microwaves. 4,280,113, Cl. 333-202.000.

Sekiguchi, Shizuo; Tano, Tetsuo; and Kitano, Kyozo, to Lion Fat & Oil Co., Ltd., The. Homogeneous aqueous alpha-olefin sulfonate composition. 4,279,786, Cl. 252-536.000.

Sekine, Mitsuo: *See—*
Nishikubo, Yasuhiko; and Sekine, Mitsuo, 4,280,210, Cl. 368-73.000.

Sekiya, Koichi: *See—*
Saito, Yukio; Sekiya, Koichi; Takahashi, Masaaki; and Akiyama, Seigo, 4,279,616, Cl. 23-230.00B.

Sekora, Robert H., to Conoco, Inc. Apparatus for splitting a stream of particulate solids. 4,279,338, Cl. 198-525.000.

Selective Feeder Company: *See—*
Brooks, Cletus A., 4,279,219, Cl. 119-51.00R.

Semba, Takanori: *See—*
Ohzeki, Toshio; and Semba, Takanori, 4,279,805, Cl. 260-45.9NC.

Sentralinstitutt for Industriell Forskning: *See—*
Ersoy, Okan K., 4,279,462, Cl. 350-3.600.

Sernevi, Sten. Machine designed to fill hollow profile rods with a granular material. 4,279,065, Cl. 29-33.00K.

Servbest Foods, Inc.: *See—*
Kentor, William E., 4,279,935, Cl. 426-264.000.

Seton Company: *See—*
Cioca, Gheorghe, 4,279,812, Cl. 260-123.700.

Settlemire, Eugene F., to Webb, Austin A. Plural key actuated totalizer for gasoline sales pump. 4,280,035, Cl. 235-94.00R.

Shahani, Khemchand M.; Wagner, Frederick W.; and Kilara, Arun, to University of Nebraska, The Board of Regents of the. Regenerable insoluble support for protein immobilization. 4,279,998, Cl. 435-174.000.

Sharp Kabushiki Kaisha: *See—*
Ezaki, Akira; Kobayashi, Yoshiaki; and Hayashi, Sigeaki, 4,280,034, Cl. 235-1.00D.
Hayakawa, Masao; Maeda, Takamichi; and Kumura, Masao, 4,280,132, Cl. 357-70.000.
Yamamoto, Kunio, 4,279,384, Cl. 239-67.000.

Sharpless, Robert G.: *See—*
Barnett, Roger C.; Sharpless, Robert G.; and Mossman, Colin F., 4,279,685, Cl. 156-509.000.

Shaver, Robert G.; and Leake, William R., to Versar, Inc. Apparatus for making hollow carbon microspheres. 4,279,702, Cl. 202-137.000.

Shaw, Mark. Board game involving multiple variables and performance determination. 4,279,422, Cl. 273-256.000.

Shell Oil Company: *See—*
Anderson, Martin; and Woodall, Roger E., 4,279,903, Cl. 424-246.000.
Day, Janet A.; Devlin, Barry R. J.; and Searle, Robert J. G., 4,279,821, Cl. 260-326.270.
Gwyn, John E., 4,279,733, Cl. 208-48.00R.
Gwyn, John E., 4,279,734, Cl. 208-48.00Q.
Haynes, George R., 4,279,925, Cl. 424-311.000.
Haynes, George R., 4,279,929, Cl. 424-324.000.
Knapp, Randolph H.; Lawson, Jimmie B.; Reisberg, Joseph; Thigpen, David R.; and Hill, Harold J., 4,279,305, Cl. 166-307.000.
Pott, Gerard T.; and Stuiver, Johannes C. M., 4,279,778, Cl. 252-439.000.

Shen, Mitchel M.: *See—*
Osada, Yoshihito; Bell, Alexis T.; and Shen, Mitchel M., 4,279,723, Cl. 204-164.000.

Sheppard, Elvin N., to Pierdeed Limited. Method of manufacturing corrugated insulating structural members. 4,279,679, Cl. 156-196.000.

Sherman, Charles J., to Bell Telephone Laboratories, Incorporated. Printed wiring board and connector apparatus. 4,279,459, Cl. 339-75.0MP.

Sherritt Gordon Mines Limited: *See—*
Ruscoe, Michael J. H.; Sarkar, Kshitindra M.; and Clegg, Maurice A., 4,279,968, Cl. 428-677.000.
Weir, Donald R., 4,279,867, Cl. 423-26.000.

Sherwood Medical Industries, Inc.: *See—*
Friehler, William R., 4,279,863, Cl. 422-102.000.

Shibatani, Kyoichiro: *See—*
Yamashita, Shuzo; Shibatani, Kyoichiro; Takakura, Kiochi; and Imai, Kiyokazu, 4,279,795, Cl. 260-29.6RW.

Shibaura Engineering Works Co., Ltd.: *See—*
Takekoshi, Yoshikazu; and Yagisawa, Takeshi, 4,279,163, Cl. 73-761.000.

Shiga, Akinobu; Fukui, Yoshiharu; Hanji, Katsumi; Sasaki, Toshio; Okawa, Masahisa; Matsuura, Hideaki; and Yamada, Yasuharu, to Sumitomo Chemical Company, Limited. Catalyst system. 4,279,776, Cl. 252-429.00B.

Shimano Industrial Company Limited: *See—*
Egami, Tetsufumi, 4,279,605, Cl. 474-82.000.
Nagano, Masashi; and Isobe, Mitsuhide, 4,279,172, Cl. 474-82.000.

Shimotori, Kazumi; Izumi, Isao; and Murabayashi, ideki, to Tokyo Shibaura Denki Kabushiki Kaisha. Sheath heater. 4,280,046, Cl. 219-544.000.

Shinagawa Refractories Co., Ltd.: *See—*
Danjyo, Hiroyuki; and Mori, Masashi, 4,279,844, Cl. 264-30.000.

Shinko Plant Co. Ltd.: *See—*
Nakamura, Hiroshi, 4,279,281, Cl. 144-2.00Z.

Shinohara, Eisaku: *See—*
Yotsumoto, Toshiyuki; Ujita, Tuginobu; and Shinohara, Eisaku, 4,279,324, Cl. 180-336.000.

Shionozaki, Yoshio; Kanbe, Sakao; and Takei, Katsumori, to Kabushiki Kaisha Suwa Seikosha. (2'-Cyano-4'-n-alkyl)phenyl-3-chloro-4-n-alkoxy benzoates and liquid crystal compositions thereof. 4,279,771, Cl. 252-299.630.

Shiraishi, Atsushi: *See—*
Fukushima, Osamu; and Shiraishi, Atsushi, 4,279,495, Cl. 354-321.000.

Shishido, Toetsu: *See—*
Yajima, Seishi; Okamura, Kiyohito; Shishido, Toetsu; and Hasegawa, Yoshio, 4,279,654, Cl. 106-39.600.

Shiurila, John, to Centronics Data Computer Corp. Dot matrix printing device employing novel image transfer technique for printing on single ply or multiple ply print receiving media. 4,279,519, Cl. 400-124.000.

Shofner, Manley R.; and Huett, Lenora M. Energy releasing novelties. 4,279,090, Cl. 40-617.000.

Shono, Tetsuji; Goto, Kazuo; and Ohishi, Michiro, to Asahi Kogaku Kogyo Kabushiki Kaisha. Interchangeable eye piece-housing. 4,279,489, Cl. 354-155.000.

Shotwell, Kenneth E.: *See—*
Fitzpatrick, Peter R.; Meyerand, Russell G., Jr.; and Shotwell, Kenneth E., 4,279,294, Cl. 165-45.000.

Shtanko, Jury P.: *See—*
Medovar, Boris I.; Baglai, Vitaly M.; Us, Vasily I.; Bogachenko, Alexei G.; Timashov, Grigory A.; Fedorovsky, Boris B.; Bondarenko, Oleg P.; Shtanko, Jury P.; Artamonov, Viktor L.; Pavlov, Leonid V.; Eltsov, Konstantin S.; Stetsenko, Nikolai V.; Kaganovsky, Gary P.; Korotkov, Albert N.; and Popov, Sergei S., 4,279,642, Cl. 75-10.00C.

Shuck, Lowell Z., to United States of America, Energy. Apparatus for installing condition-sensing means in subterranean earth formations. 4,279,299, Cl. 166-60.000.

Shudo, Koichi: *See—*
Okamoto, Toshihiko; Isogai, Yo; Shudo, Koichi; and Takahashi, Soshiro, 4,279,639, Cl. 71-94.000.

Sidler, Hans: *See—*
Wey, Joseph; Sidler, Hans; and Stalder, Hans, 4,279,402, Cl. 251-63.000.

Siemens Aktiengesellschaft: *See—*
Scheubeck, Egmont; Blazevic, Gertrud; and Boehner, Marianne, 4,279,727, Cl. 204-195.00R.
Weber, Walter, 4,279,596, Cl. 433-126.000.
Zeitrag, Rolf, 4,280,216, Cl. 370-62.000.

Signer, Hans: *See—*
Buhl, Rainer; and Signer, Hans, 4,279,216, Cl. 118-723.000.

Silicon General, Inc.: *See—*
Lindberg, Charles R., 4,280,090, Cl. 323-315.000.

Silver, Bruce R., to Polaroid Corporation. Player remote control having single wire control. 4,280,152, Cl. 360-61.000.

Silverberg, Morton, to Xerox Corporation. Belt support system. 4,279,496, Cl. 355-3.0BE.

Silverman, Daniel. Seismic method of mapping horizontal fractures in the earth. 4,280,200, Cl. 367-37.000.

Sim, Alexander K.: *See—*
Maasbol, Alfred G.; and Sim, Alexander K., 4,279,914, Cl. 424-258.000.

Simi, Edward A.: *See—*
Miller, Richard R.; and Simi, Edward A., 4,280,062, Cl. 307-10.0LS.

Simme, Sture B. R. Cover-attaching device for a truck, trailer or similar vehicle. 4,279,064, Cl. 24-248.00R.

Simms, Donald S. Fire prevention filter for chimneys and the like. 4,279,629, Cl. 55-307.000.

Simonsson, Leif R.: *See—*
Claeson, Karl G.; Aurell, Leif E.; Simonsson, Leif R.; and Arielly, Salo, 4,279,810, Cl. 260-112.50R.

Simpura, Esa J.: *See—*
Ukkonen, Keijo A.; and Simpura, Esa J., 4,279,827, Cl. 260-397.250.

Singer Company, The: *See—*
Comerford, John; and Zimmer, Robert E., 4,280,027, Cl. 200-6.00A.
Flower, Robert A., 4,280,222, Cl. 375-38.000.
Haas, Robert V., 4,279,453, Cl. 312-282.000.
Kleinwaks, Jeffrey M., 4,279,192, Cl. 91-361.000.
Vojvodich, Mario M., 4,279,465, Cl. 350-96.200.

Singh, Anand P., to NRM Corporation. Tire loader. 4,279,438, Cl. 294-88.000.

Singh, Jasbir: *See—*
Overhoff, Theodor; Schulten, Rudolf; Singh, Jasbir; Sylvester, Gerd; and Witte, Josef, 4,279,697, Cl. 176-22.000.

Single Buoy Moorings, Inc.: *See—*
Remery, George F. M., 4,279,543, Cl. 405-195.000.

Sir Henry Lawson-Tancred, Sons & Co. Ltd.: *See—*
Lawson-Tancred, Henry, 4,280,061, Cl. 290-55.000.

Sisoler, Gabriel M.; Spade, Vincent L.; Sowman, James P.; Casterwiler, Larry J.; and Puma, Bernard, to Ford Motor Company. Dam construction for controlling tin currents in a float glass chamber. 4,279,634, Cl. 65-182.300.

Sistag, Maschinenfabrik Sidler Stalder AG: *See—*
Wey, Joseph; Sidler, Hans; and Stalder, Hans, 4,279,402, Cl. 251-63.000.

Siwik, Henry A.; and Kobylarz, Lawrence P., to Burroughs Corporation. Drive mechanisms for passbooks. 4,279,413, Cl. 271-274.000.
Skach, Edward J., Jr.; and Cobel, George B., to Dow Chemical Company, The. Salt-coated magnesium granules. 4,279,641, Cl. 75-0.50B.
Skadin, Vasily G.: *See—*
Zverev, Anatoly I.; Astakhov, Evgeny A.; Klimenko, Valery S.; Skadin, Vasily G.; and Timoshin, Mikhail A., 4,279,383, Cl. 239-61.000.
Skala, Stephen F. Heat storage in by-products of an intermittent process. 4,279,227, Cl. 123-179.00H.
Skerlos, Peter C., to Zenith Radio Corporation. Microcomputer-controlled one-step-back automatic frequency control tuning system. 4,280,140, Cl. 358-195.100.
Skolaude, Werner, to Linde Aktiengesellschaft. Process and apparatus for the production of oxygen by two-stage low-temperature rectification of air. 4,279,631, Cl. 62-29.000.
Sledzieski, William L.: *See—*
Bosco, Peter M.; and Sledzieski, William L., 4,279,941, Cl. 426-602.000.
Slemmons, Arthur J. Forming droplets for ink jet printing. 4,280,130, Cl. 346-75.000.
Sloan, Kenneth B.: *See—*
Bodor, Nicholas S.; and Sloan, Kenneth B., 4,279,900, Cl. 424-241.000.
Small, Thomas L.: *See—*
Harvey, Richard D.; Gallaher, Thomas L.; Mullikin, Raymond L.; and Small, Thomas L., 4,279,658, Cl. 106-213.000.
Smeltz, Kenneth C.; and Strickler, Charles L., to Du Pont de Nemours, E. I., and Company. Application of durable, antistatic, soil release agent. 4,279,960, Cl. 428-290.000.
Smith, Howard L., to Crompton & Knowles Corporation. Salicyl phenyl naphthyl trisazo di and trisulfonic developed direct black dyes. 4,279,814, Cl. 260-173.000.
Smith, Kenneth M.: *See—*
Friar, Lawrence B.; and Smith, Kenneth M., 4,279,644, Cl. 75-118.00P.
Smith, Philip S., to Motorola, Inc. Incrementer/decrementer circuit. 4,280,190, Cl. 364-770.000.
Smith, Randlow: *See—*
Jones, Henry B.; and Smith, Randlow, 4,279,622, Cl. 48-197.00R.
Smith, Richard C., to Wyoming Mineral Corporation. Neutron activation probe. 4,280,048, Cl. 250-264.000.
Smith, Richard E.: *See—*
Wing, Steven D.; and Smith, Richard E., 4,279,081, Cl. 33-479.000.
Smith, William G.: *See—*
Kehrer, Gerald P.; and Smith, William G., 4,279,783, Cl. 252-511.000.
Smolders, Cees J., to Universal Corrugated Box Machinery Holding AG. Apparatus for processing longitudinally-moving webs of material. 4,279,184, Cl. 83-302.000.
Smolen, Victor F. Multiple injector flow through dissolution cell for dissolution testing apparatus. 4,279,860, Cl. 422-63.000.
Sniaviscosa Societa Nazionale Industria Applicazioni Viscosa, S.p.A.: *See—*
Ciaperoni, Aldemaro; and Cucinella, Antonino, 4,279,652, Cl. 106-18.210.
Snijder, Pieter J., to U.S. Philips Corporation. Bulk channel charge coupled device having improved input linearity. 4,280,068, Cl. 307-221.00D.
Snoek, David J.: *See—*
Boschetti, Armando; and Snoek, David J., 4,279,254, Cl. 128-395.000.
Snyder, William V.: *See—*
Lord, Tom J.; and Snyder, William V., 4,279,071, Cl. 29-717.000.
Societe a Responsabilite Limitee: Wichard: *See—*
Boissonnet, Michel, 4,279,062, Cl. 24-305.000.
Societe Anonyme dite: Ceraver: *See—*
Willem, Michel, 4,280,017, Cl. 174-182.000.
Societe d'Exploitation de Brevets J.B.: *See—*
Hancou, Theodore, 4,279,054, Cl. 15-250.420.
Societe Industrielle de Brevets et D'Etudes S.I.B.E.: *See—*
Bauer, Philippe; Lamy, Jean; and Martel, Bernard, 4,279,230, Cl. 123-440.000.
Societe Nationale des Poudres et Explosifs: *See—*
Leneveu, Louis J. J.; and Treneules, Didier J., 4,279,672, Cl. 149-19.800.
Societe Nationale d'Etude et de Construction de Moteurs d'Aviation: *See—*
Kervistin, Robert; and Lardellier, Alain M. J., 4,279,153, Cl. 73-357.000.
Societe Pour l'Equipement de Vehicules: *See—*
Guipaud, Serge C., 4,279,143, Cl. 73-35.000.
Soderberg, John H.: *See—*
Eckert, Alton B.; Duwel, Edward C.; and Soderberg, John H., 4,280,180, Cl. 364-464.000.
Sodip SA: *See—*
Amicel, Charles; Biot, Bernard; Butruille, Yves; and Ollivier, Christian, 4,279,678, Cl. 156-169.000.
Sokolovsky, Alexandr E.: *See—*
Lyakhevich, Genrikh D.; Belkevich, Petr I.; Rudkovsky, Alexandr D.; Sokolovsky, Alexandr E.; and Kirilchik, Alexandr I., 4,279,865, Cl. 422-187.000.
Solid State Scientific, Inc.: *See—*
Ransom, Stephen A.; Hohmann, Jere W.; and Nahmias, Clement, 4,280,212, Cl. 368-82.000.
Solomon, Archie. Garment rack system. 4,279,201, Cl. 104-100.000.
Solomon, Elias E. Multiple chamber ionization detector. 4,280,052, Cl. 250-381.000.
Sonda, Eijiro, to TDK Electronics Co., Ltd. DC-DC Converter. 4,280,174, Cl. 363-24.000.
Sony Corporation: *See—*
Kashima, Tsunehiro; Sakoda, Shunsuke; Tsuda, Hidetoshi; Hiramatsu, Tamihei; and Morita, Kazuyuki, 4,280,136, Cl. 358-93.000.
Kato, Tetsuro, 4,280,133, Cl. 358-8.000.
Mogi, Takao; Ishigaki, Yoshio; and Okada, Hisao, 4,280,139, Cl. 358-165.000.
Nakayama, Masayuki, 4,280,159, Cl. 360-137.000.
Osakabe, Yoshio; and Yasuda, Hiroshi, 4,280,199, Cl. 365-236.000.
Tooyama, Akira; Tooyama, Takashi; and Hosono, Takashi, 4,280,134, Cl. 358-67.000.
Sorenson, Richard D.: *See—*
James, Robert C.; Horsman, Dennis P.; and Sorenson, Richard D., 4,279,116, Cl. 53-466.000.
Soteland, Nicolai: *See—*
Fritzvold, Bjorn H.; and Soteland, Nicolai, 4,279,694, Cl. 162-28.000.
Soulard, Roger R.: *See—*
Wu, Edward S.; and Soulard, Roger R., 4,279,390, Cl. 242-192.000.
Southeastern Blueberry Council, Inc.: *See—*
McClure, William F.; and Rohrbach, Roger P., 4,279,346, Cl. 209-582.000.
Southwire Co.: *See—*
Evrard, Gerald D.; Cook, Henry S.; and Kamalich, Anthony J., 4,279,052, Cl. 15-93.00A.
Sowman, James P.: *See—*
Sisoler, Gabriel M.; Spade, Vincent L.; Sowman, James P.; Casterwiler, Larry J.; and Puma, Bernard, 4,279,634, Cl. 65-182.300.
SPA-Societa Prodotti Antibiotici S.p.A.: *See—*
Bruzzese, Tiberio; and Ferrari, Rodolfo, deceased, 4,279,926, Cl. 424-316.000.
Spade, Vincent L.: *See—*
Sisoler, Gabriel M.; Spade, Vincent L.; Sowman, James P.; Casterwiler, Larry J.; and Puma, Bernard, 4,279,634, Cl. 65-182.300.
Spadone, Leighton R., to Goodyear Tire & Rubber Company, The. Pneumatic rubber tire containing enhanced inner liner or inner tube. 4,279,284, Cl. 152-330.00R.
Speakman, Edwin L., to Standard Brands Incorporated. Recovery of cerium from polymer dispersions. 4,279,791, Cl. 260-17.4GC.
Spenner, Anton: *See—*
Vente, Paul; Seidenschnur, Dieter; Knipp, Ulrich; and Spenner, Anton, 4,279,856, Cl. 264-313.000.
Sperber, Werner: *See—*
Laar, Erwin; and Sperber, Werner, 4,279,371, Cl. 226-91.000.
Sperry Corporation: *See—*
Rattlingourd, Glen D., 4,280,099, Cl. 328-63.000.
Spinks, Ray E. Parachute canopy suspension line release device and method. 4,279,393, Cl. 244-152.000.
Sprague Electric Company: *See—*
Arora, Mulk A.; and Randall, John J., Jr., 4,279,714, Cl. 204-129.900.
Arora, Mulk A.; Randall, John J., Jr.; and Bernard, Walter J., 4,279,715, Cl. 204-129.900.
Sprecher, Gilbert C.: *See—*
Breault, Richard D.; Goller, Glen J.; Roethlein, Richard J.; and Sprecher, Gilbert C., 4,279,970, Cl. 429-35.000.
Stabilimenti Meccanici VM S.p.A.: *See—*
Brighigna, Mario, 4,279,194, Cl. 91-483.000.
Staehle, Hermann: *See—*
Effenberger, Alfred; and Staehle, Hermann, 4,279,515, Cl. 366-76.000.
Staehle Maschinenbau GmbH: *See—*
Effenberger, Alfred; and Staehle, Hermann, 4,279,515, Cl. 366-76.000.
Stalder, Hans: *See—*
Wey, Joseph; Sidler, Hans; and Stalder, Hans, 4,279,402, Cl. 251-63.000.
Stamicarbon B.V.: *See—*
Nieuwkamp, Johannes G. M., 4,279,820, Cl. 260-326.5FM.
Standard Brands Incorporated: *See—*
Bosco, Peter M.; and Sledzieski, William L., 4,279,941, Cl. 426-602.000.
Speakman, Edwin L., 4,279,791, Cl. 260-17.4GC.
Standard Oil Company, The: *See—*
Velenyi, Louis J.; and Krupa, Andrew S., 4,279,777, Cl. 252-439.000.
Velenyi, Louis J.; Paparizos, Christos; and Dolhyj, Serge R., 4,279,829, Cl. 260-429.900.
Standard Oil Company (Indiana): *See—*
Lewis, Harry R., Jr., 4,279,542, Cl. 405-169.000.
Stanwood, Jay W.; Clarke, William A.; and MacLeane, Johannes, to Ford Aerospace & Communications Corporation. Mechanical joinder of composite shaft to metallic end members. 4,279,275, Cl. 138-109.000.
Stappaerts, Eddy A., to Northrop Corporation. Efficient frequency converter utilizing higher order Stokes-Raman scattering. 4,280,109, Cl. 331-94.50N.
Stassi, Paul: *See—*
Woods, Leodis V.; Stassi, Paul; and Wilkinson, Ralph A., 4,279,995, Cl. 435-38.000.
Stauffer Chemical Company: *See—*
Gutman, Arnold D., 4,279,638, Cl. 71-92.000.

Steele, S. Robert, to Raytheon Company. Semiconductor device manufacturing methods utilizing a predetermined flow of reactive substance over a dopant material. 4,279,670, Cl. 148-175.000.

Stellrecht, Ewald A., to Roll Former Corporation. Controllably driven seamer. 4,279,211, Cl. 113-55.000.

Stemme, Otto; Fergg, Berthold; Osegowitsch, Viktor; and Viehrig, Wolfgang, to AGFA-Gevaert, A.G. Apparatus for exposing and developing film units or the like. 4,279,491, Cl. 355-27.000.

Stemme, Otto; Wagensonner, Eduard; and Ruf, Wolfgang, to AGFA-Gevaert, A.G. Optical reproducing device for a super-8 film reader. 4,280,142, Cl. 358-214.000.

Stendel, Wilhelm: *See*—
Fuchs, Rainer; Hoffmann, Hellmut; Hammann, Ingeborg; Homeyer, Bernhard; and Stendel, Wilhelm, 4,279,920, Cl. 424-282.000.
Fuchs, Rainer; Naumann, Klaus; Lantzsch, Reinhard; Hagemann, Hermann; Hammann, Ingeborg; Homeyer, Bernhard; Behrenz, Wolfgang; and Stendel, Wilhelm, 4,279,923, Cl. 424-304.000.

Sterner, Charles J.: *See*—
Kwasnoski, Daniel; Sterner, Charles J.; Horst, Russel J.; and Burcaw, Kenneth R., 4,279,703, Cl. 202-158.000.

Stetsenko, Nikolai V.: *See*—
Medovar, Boris I.; Baglai, Vitaly M.; Us, Vasily I.; Bogachenko, Alexei G.; Timashov, Grigory A.; Fedorovsky, Boris B.; Bondarenko, Oleg P.; Shtanko, Jury P.; Artamonov, Viktor L.; Pavlov, Leonid V.; Eltsov, Konstantin S.; Stetsenko, Nikolai V.; Kaganovsky, Gary P.; Korotkov, Albert N.; and Popov, Sergei S., 4,279,642, Cl. 75-10.00C.

Stettner, Ernest R., to General Motors Corporation. Carburetor with improved choke mechanism. 4,279,841, Cl. 261-23.00A.

Stevance, Jean: *See*—
Cachier, Gerard; and Stevance, Jean, 4,280,110, Cl. 331-107.0DP.

Stevens, Aaron A.: *See*—
Lawrence, Randall K.; and Stevens, Aaron A., 4,279,117, Cl. 56-11.300.

Stewart, Clive E. E.; Rosser, William J. N.; and Ansell, Martin P., to ITT Industries, Inc. Glass encapsulation of semiconductor devices. 4,279,785, Cl. 252-518.000.

Stock, Rodney D., to Ampex Corporation. Frame period timing generator for raster scan. 4,280,138, Cl. 358-150.000.

Stodt, Eberhard; and Kaldenbach, Erwin, to Lindemann Maschinenfabrik GmbH. Apparatus for loading bales on to transport vehicles. 4,279,557, Cl. 414-400.000.

Stone, Thomas R., to PACCAR Inc. Latching system for a truck cab. 4,279,321, Cl. 180-89.140.

Stonestrom, James P.: *See*—
Nassi, Menahem; and Stonestrom, James P., 4,280,178, Cl. 364-414.000.

Straubel, Max; and Voit, Willi, to Robert Bosch GmbH. High pressure fuel injection apparatus for internal combustion engines. 4,279,385, Cl. 239-90.000.

Strauch, Dieter; and Belger, Peter. Mineral filler, method of preparation and use thereof. 4,279,661, Cl. 106-288.00B.

Street, Graham S. B. Laser scanning apparatus with beam position correction. 4,279,472, Cl. 250-201.000.

Streifer, William: *See*—
Scifres, Donald R.; Burnham, Robert D.; and Streifer, William, 4,280,106, Cl. 331-94.50H.
Scifres, Donald R.; Ponce, Fernando A.; Connell, G. A. Neville; and Streifer, William, 4,280,107, Cl. 331-94.50H.
Scifres, Donald R.; Burnham, Robert D.; and Streifer, William, 4,280,108, Cl. 331-94.50H.

Strickler, Charles L.: *See*—
Smeltz, Kenneth C.; and Strickler, Charles L., 4,279,960, Cl. 428-290.000.

Stringer, William C.: *See*—
Anderson, Maynard E.; Marshall, Robert T.; and Stringer, William C., 4,279,059, Cl. 17-51.000.

Strobel, Rudolf G. K.; and Eich, Richard A., to Procter & Gamble Co., The. Liquid extract decaffeination with benzyl alcohol containing mixtures. 4,279,937, Cl. 426-424.000.

Strobotronix, Inc.: *See*—
Lazarus, Arnold; and Weiss, Stuart L., 4,280,018, Cl. 179-1.00M.

Stuiver, Johannes C. M.: *See*—
Pott, Gerard T.; and Stuiver, Johannes C. M., 4,279,778, Cl. 252-439.000.

Stump, Lee K. Occlusal instrument. 4,279,260, Cl. 128-774.000.

Stumpf, Karl. Support installation for large cylindrical load units, particularly large tubes. 4,279,559, Cl. 414-431.000.

Stumpp, Gerhard: *See*—
Flaig, Ulrich; Piwonda, Fridolin; Stumpp, Gerhard; and Wessel, Wolf, 4,279,235, Cl. 123-569.000.

Su, Sophia R.: *See*—
Natansohn, Samuel; and Su, Sophia R., 4,279,870, Cl. 423-54.000.

Suematsu, Shigeru: *See*—
Doi, Toshiaki; Suematsu, Shigeru; Nishida, Chikamasa; and Hiranuma, Hiroshi, 4,279,698, Cl. 176-22.000.

Sueoka, Akinori; Okamoto, Takehiko; Ohmori, Akio; Kawai, Syuji; and Ueda, Minoru, to Kuraray Co., Ltd. Polyvinyl alcohol semi-permeable membrane and method for producing same. 4,279,752, Cl. 210-500.200.

Suga, Kyozo; Iizuka, Jinya; and Tsuji, Yoshiomi, to Kazuto Nakazawa, General Director Public Works Research Institute Ministry of Construction; and Sumitomo Electric Industries, Ltd. Collapsable dam. 4,279,540, Cl. 405-115.000.

Suganuma, Nobuo; Uematsu, Michio; Mandai, Hiroshi; Horiguchi, Yasunobu; and Masamizu, Koji, to Lion Corporation. Oral composition. 4,279,888, Cl. 424-49.000.

Sugimori, Shigeru: *See*—
Inukai, Takashi; Inoue, Hiromichi; Furukawa, Kenji; Sato, Hideo; and Sugimori, Shigeru, 4,279,770, Cl. 252-299.620.

Sugisawa, Ko: *See*—
Koshida, Daikichi; Sugisawa, Ko; Kimura, Takashi; and Nakajima, Setsuo, 4,279,932, Cl. 426-89.000.

Sugiyama, Sakae: *See*—
Kajiyama, Sigeru; Kanda, Kimio; and Sugiyama, Sakae, 4,279,158, Cl. 73-637.000.

Suh, Nam P., to Massachusetts Institute of Technology. Process for making uniform size particles. 4,279,843, Cl. 264-11.000.

Sullivan, John L.: *See*—
Inculet, Ion I.; Castle, George S. P.; and Sullivan, John L., 4,279,625, Cl. 55-131.000.

Sulzer Brothers Limited: *See*—
Riesen, Peter, 4,279,133, Cl. 66-84.00R.
Zerlauth, Ferdinand, 4,279,424, Cl. 277-83.000.

Sumitomo Chemical Company, Limited: *See*—
Ito, Naoya; Saito, Kiichi; Yoshida, Takeshi; Aoki, Masahiro; Okubo, Masao; and Miki, Masayoshi, 4,279,648, Cl. 75-128.00C.
Shiga, Akinobu; Fukui, Yoshiharu; Hanji, Katsumi; Sasaki, Toshio; Okawa, Masahisa; Matsuura, Hideaki; and Yamada, Yasuharu, 4,279,776, Cl. 252-429.00B.
Suzuki, Yukio; Kasamatsu, Kiyoshi; and Aketa, Kohichi, 4,279,924, Cl. 424-304.000.
Tanaka, Hiromichi; and Tomizawa, Choji, 4,279,950, Cl. 427-393.600.

Sumitomo Electric Industries, Ltd.: *See*—
Fujimori, Naoji; Tobioka, Masaaki; Asai, Tsuyoshi; Yamamoto, Takaharu; and Miyake, Masaya, 4,279,651, Cl. 75-233.000.
Sawada, Kazuo, 4,279,967, Cl. 428-647.000.
Suga, Kyozo; Iizuka, Jinya; and Tsuji, Yoshiomi, 4,279,540, Cl. 405-115.000.

Sumitomo Metal Mining Company Limited: *See*—
Hamagami, Teruaki; Maetani, Kazuo; and Sato, Fumio, 4,279,682, Cl. 156-367.000.

Supra Fabrique d'Appareils de Chauffage et de Cuisine, S.A.: *See*—
Blum, Jean, 4,279,239, Cl. 126-120.000.

Suzuki, Fujio: *See*—
Ishida, Nakao; Satoh, Hiroshi; Suzuki, Fujio; and Miyao, Kouhei, 4,279,892, Cl. 424-85.000.

Suzuki Jidosha Kogyo Kabushiki Kaisha: *See*—
Tsuzuki, Kunihiko; Ogasawara, Norio; and Ema, Shigeo, 4,279,619, Cl. 44-56.000.

Suzuki, Yasuo: *See*—
Ito, Teruyuki; and Suzuki, Yasuo, 4,279,560, Cl. 414-589.000.

Suzuki, Yukio; Kasamatsu, Kiyoshi; and Aketa, Kohichi, to Sumitomo Chemical Company, Limited. Mixture of stereoisomers of α-cyano-3-(4-halogenophenoxy)benzyl 2-(4-chlorophenyl)isovalerate, a process for producing the same, and a composition containing the same. 4,279,924, Cl. 424-304.000.

Svenskt Stal Aktiebolag: *See*—
Karlsson, Per-Olle, 4,280,094, Cl. 324-202.000.

Swapceinski, John P., to Eastman Kodak Company. Magnetic field adjustment for magnetic brushes. 4,279,942, Cl. 427-14.100.

Sweeney, William M., to Texaco Inc. Novel process for treating gasahol. 4,279,620, Cl. 44-56.000.

Swiatosz, Edmund, to United States of America, Navy. Charge coupled device temperature gradient and moisture regulator. 4,279,292, Cl. 165-61.000.

Sybron Corporation: *See*—
Amorese, Franklyn J.; and Piarulli, Vincent J., 4,279,356, Cl. 220-314.000.

Sylvester, Gerd: *See*—
Overhoff, Theodor; Schulten, Rudolf; Singh, Jasbir; Sylvester, Gerd; and Witte, Josef, 4,279,697, Cl. 176-22.000.

Syme, Duncan C., to Vermont Castings, Inc. Wood burning heating apparatus. 4,279,238, Cl. 126-77.000.

Syva Company: *See*—
Daffern, George M., 4,279,509, Cl. 356-246.000.

Szabo, Robert C.; and Incaudo, Peter J., Jr. Convertible intake manifold. 4,279,224, Cl. 123-52.0MV.

Szasz, Kalman: *See*—
Jovanovics, Karola; Szasz, Kalman; Kellner, Bela; Nemeth, Laszlo; Relle, Zsuzsa; Bittner, Emil; Dezseri, Eszter; and Eles, Janos, 4,279,816, Cl. 260-244.400.
Jovanovics, Karola; Szasz, Kalman; Kellner, Bela; Nemeth, Laszlo; Relle, Zsuzsa; Bittner, Emil; Deszeri, Eszter; and Eles, Janos, 4,279,915, Cl. 424-262.000.
Jovanovics, Karola; Szasz, Kalman; Kellner, Bela; Nemeth, Laszlo; Relle, Zsuzsa; Bittner, Emil; Deszeri, Eszter; and Eles, Janos, 4,279,916, Cl. 424-262.000.

Szasz, Tibor: *See*—
Krob, Erwin; and Szasz, Tibor, 4,279,432, Cl. 280-605.000.

Szatkowski, Paul R.: *See*—
Louderback, Allan L.; and Szatkowski, Paul R., 4,279,775, Cl. 252-408.000.

Tabb, David L.: *See*—
Magers, Thomas A.; and Tabb, David L., 4,279,993, Cl. 435-14.000.

Tagg, Forrest L.; and Tourville, Francis E., to Air-Glide Corporation. Fifth-wheel suspension system. 4,279,430, Cl. 280-439.000.

Taguchi, Tatsuya: *See*—
Tsunekawa, Tokuichi; Sakane, Toshio; and Taguchi, Tatsuya, 4,280,151, Cl. 360-33.000.

Taiheiyo Engineering: *See*—
Takahashi, Ken; and Ito, Tsunetoshi, 4,279,443, Cl. 299-1.000.

Takagi, Kazumasa; Fukazawa, Tokuumi; and Oi, Tetsu, to Hitachi Chemical Company, Ltd. Crystal for scintillator. 4,279,772, Cl. 252-301.40F.

Takagi, Shigeru: *See*—
Nara, Akio; Takagi, Shigeru; and Matsui, Kazuma, 4,279,864, Cl. 422-179.000.

Takagi, Takeji; and Hosaka, Kiyokazu, to Olympus Optical Co., Ltd. Flexible tube. 4,279,245, Cl. 128-004.000.

Takahama, Akio; and Hatano, Tatsuro, to Nippon Kogaku K.K. A surveying instrument having means for transmitting signals between an alidade and a fixed member. 4,280,057, Cl. 250-551.000.

Takahashi, Katsuhito, to Seissan Nippon-Sha K. K. Method of means for joining plastic fastener strip to film. 4,279,677, Cl. 156-160.000.

Takahashi, Ken; and Ito, Tsunetoshi, to Taiheiyo Engineering. Mining apparatus. 4,279,443, Cl. 299-1.000.

Takahashi, Masaaki: *See*—
Saito, Yukio; Sekiya, Koichi; Takahashi, Masaaki; and Akiyama, Seigo, 4,279,616, Cl. 23-230.00B.

Takahashi, Masayuki; and Monma, Hideo, to Fujitsu Limited. Quick feeding system for a counter. 4,280,213, Cl. 368-187.000.

Takahashi, Soshiro: *See*—
Okamoto, Toshihiko; Isogai, Yo; Shudo, Koichi; and Takahashi, Soshiro, 4,279,639, Cl. 71-94.000.

Takahi, Yukiyoshi: *See*—
Jojima, Teruomi; Takeshiba, Hideo; and Takahi, Yukiyoshi, 4,279,908, Cl. 424-248.550.

Takakura, Kiochi: *See*—
Yamashita, Shuzo; Shibatani, Kyoichiro; Takakura, Kiochi; and Imai, Kiyokazu, 4,279,795, Cl. 260-29.6RW.

Takami, Toru; and Yonekawa, Yuriko, to Ajinomoto Company, Incorporated. Amino acid solution for intravenous nutrition. 4,279,917, Cl. 424-273.00R.

Takamura, Yoshiyuki: *See*—
Chino, Koichi; Yusa, Hideo; Oda, Akira; Miura, Hideichi; Horiuchi, Susumu; and Takamura, Yoshiyuki, 4,279,692, Cl. 159-6.00W.

Takashima, Toshiyuki, to Fujisawa Pharmaceutical Co., Ltd. Antiallergic method. 4,279,909, Cl. 424-250.000.

Takasugi, Hisashi: *See*—
Takaya, Takao; Masugi, Takashi; Takasugi, Hisashi; and Kochi, Hiromu, 4,279,818, Cl. 424-246.000.

Takato, Masao; Imai, Masumi; and Furuhashi, Toshio, to Hitachi, Ltd. Input signal processor used in electronic engine control apparatus. 4,280,189, Cl. 364-734.000.

Takaya, Takao; Masugi, Takashi; Takasugi, Hisashi; and Kochi, Hiromu, to Fujisawa Pharmaceutical Co., Ltd. Syn-isomers of 7-[2-alkoxyimino-2-(2-amino-thiazol-4-yl)acetamido]-3-[nitrobenzoyl-, or benzoyl-oxymethyl]-3-cephem-4-carboxylic acid. 4,279,818, Cl. 424-246.000.

Takehara, Toshio: *See*—
Ogawa, Yutaka; Takehara, Toshio; and Asami, Seiichi, 4,279,849, Cl. 264-63.000.

Takei, Katsumori: *See*—
Shionozaki, Yoshio; Kanbe, Sakao; and Takei, Katsumori, 4,279,771, Cl. 252-299.630.

Takekoshi, Yoshikazu; and Yagisawa, Takeshi, to Tokyo Shibaura Denki Kabushiki Kaisha; and Shibaura Engineering Works Co., Ltd. Stress measuring apparatus. 4,279,163, Cl. 73-761.000.

Takematsu, Hikaru: *See*—
Sekiguchi, Koichi; Takematsu, Hikaru; and Tatsukura, Kazutada, 4,280,022, Cl. 179-99.00A.

Takeshiba, Hideo: *See*—
Jojima, Teruomi; Takeshiba, Hideo; and Takahi, Yukiyoshi, 4,279,908, Cl. 424-248.550.

Takii, Yasuo: *See*—
Kondo, Shiro; and Takii, Yasuo, 4,280,031, Cl. 200-314.000.

Tamoni, Giorgion: *See*—
Pagani, Hermes; Parenti, Francesco; Coronelli, Carolina; and Tamoni, Giorgion, 4,280,001, Cl. 435-253.000.

Tamura, Nobuhiro: *See*—
Nishikido, Joji; Fukuoka, Yohei; and Tamura, Nobuhiro, 4,279,836, Cl. 260-500.50H.

Tan, Kwang G., to International Business Machines Corporation. Memory configuration, address interleaving, relocation and access control system. 4,280,176, Cl. 364-200.000.

Tanaka, Hiromichi; and Tomizawa, Choji, to Sumitomo Chemical Company, Limited. Jointing of concrete structure. 4,279,950, Cl. 427-393.600.

Tanaka, Yoko: *See*—
DeLuca, Hector F.; Schnoes, Heinrich K.; Tanaka, Yoko; and Wichmann, Joseph K., 4,279,826, Cl. 260-397.200.

Tanka, David M.; and Reynolds, Thomas G., to North American Philips Corporation. Ground fault circuit interrupter. 4,280,162, Cl. 361-45.000.

Tano, Tetsuo: *See*—
Sekiguchi, Shizuo; Tano, Tetsuo; and Kitano, Kyozo, 4,279,786, Cl. 252-536.000.

Tar, Domokos, to Cerberus AG. Flame detector. 4,280,058, Cl. 250-554.000.

Tarkinson, Ann Ward: *See*—
Tarkinson, Kevork W., 4,279,796, Cl. 260-29.60R.

Tarkinson, Kevork W., to Tarkinson, Ann Ward. Carpet cleaning/coating mixture and method. 4,279,796, Cl. 260-29.60R.

Tasto, Manfred: *See*—
Schomberg, Hermann; and Tasto, Manfred, 4,279,157, Cl. 73-618.000.

Tatsukura, Kazutada: *See*—
Sekiguchi, Koichi; Takematsu, Hikaru; and Tatsukura, Kazutada, 4,280,022, Cl. 179-99.00A.

Tatsumi, Susumu: *See*—
Eda, Tadahiro; Tatsumi, Susumu; Imai, Chikara; and Koichi, Yasushi, 4,279,498, Cl. 355-14.00D.

Taub, Darrel. Ratchet wrench attachment. 4,279,314, Cl. 173-163.000.

Taylor, John F.: *See*—
Hoffman, John C., 4,279,255, Cl. 128-402.000.

Taylor, Raymond C., to Phillips Petroleum Company. Disc feeding apparatus for use with a packaging machine or the like. 4,279,607, Cl. 493-167.000.

TDK Electronics Co., Ltd.: *See*—
Sonda, Eijiro, 4,280,174, Cl. 363-24.000.

Technicon Instruments Corporation: *See*—
Masson, Pierre L.; Cambiaso, Cesar L.; De Steenwinkel, Floris; and Leek, Adrian E., 4,279,617, Cl. 23-230.00B.

Teitz, Konrad: *See*—
Maute, Alfred; Teitz, Konrad; Baier, Klaus; and Heid, Hans, 4,279,511, Cl. 356-328.000.

Tektronix, Inc.: *See*—
Hiltner, David F., 4,280,091, Cl. 323-315.000.

Telex Computer Products, Inc.: *See*—
Lobo, Mark A.; and Pembroke, Richard W., 4,279,386, Cl. 242-68.300.

Tepoorten, Darrell M.; and Hechtman, Steven A., to Tepoorten, Darrell M. Electronic gameboard. 4,279,421, Cl. 273-237.000.

Tessier, Jean: *See*—
Martel, Jacques; Tessier, Jean; and Demoute, Jean-Pierre, 4,279,835, Cl. 260-465.00D.

Tetra Consultants Inc.: *See*—
Huizinga, Menno, 4,279,787, Cl. 260-8.000.

Texaco Inc.: *See*—
Jones, Henry B.; and Smith, Randlow, 4,279,622, Cl. 48-197.00R.
Sweeney, William M., 4,279,620, Cl. 44-56.000.
Williams, Thomas E., 4,279,301, Cl. 166-250.000.

Texas Instruments Incorporated: *See*—
Bealle, John, 4,279,623, Cl. 51-283.00R.
Dierschke, Eugene G., 4,279,690, Cl. 156-649.000.
Marcoux, Leo; and Berg, Peter G., 4,279,234, Cl. 123-549.000.
Reese, Edmund A.; White, Lionel S., Jr.; and McAlexander, Joseph C., III, 4,280,070, Cl. 307-279.000.

Thigpen, David R.: *See*—
Knapp, Randolph H.; Lawson, Jimmie B.; Reisberg, Joseph; Thigpen, David R.; and Hill, Harold J., 4,279,305, Cl. 166-307.000.

Thomas C. Elder, Inc.: *See*—
Kaufman, Kurt D., 4,279,922, Cl. 424-285.000.

Thomas, James K. Thread keeper. 4,279,389, Cl. 242-156.100.

Thompson, John W. K.: *See*—
Trafford, Larry F.; and Thompson, John W. K., 4,280,120, Cl. 340-303.000.

Thompson, Larry J., to Equipment Company of America. Attachment for lift truck. 4,279,567, Cl. 414-785.000.

Thompson, Vernon F., to Tomco, Inc. Fuel efficiency display. 4,279,145, Cl. 73-115.000.

Thompson, William J.: *See*—
Burroughs, Reginald L.; Thompson, William J.; and Wooldridge, Derek, 4,279,663, Cl. 127-1.000.

Thomson-CSF: *See*—
Cachier, Gerard; and Stevance, Jean, 4,280,110, Cl. 331-107.0DP.
Forterre, Gerard; and Berthe, Jacques, 4,280,111, Cl. 333-1.100.

Thorn, Joseph W. Brake wear indicator. 4,279,214, Cl. 116-208.000.

Thorne, George: *See*—
Bundschuh, Robert; Thorne, George; and Cottis, David, 4,279,048, Cl. 9-310.0AA.

Thurm, Siegfried; Bunge, Konrad; and Findeis, Gunter, to AGFA-Gevaert, A.G. Method of and apparatus for determining the copying light amounts for copying from color originals. 4,279,502, Cl. 355-38.000.

Tibussek, Fritz, to Wirth Maschinen- und Bohrgerate-Fabrik GmbH. Apparatus for extracting cores. 4,279,315, Cl. 175-249.000.

Tiemann, Jerome J.: *See*—
Engeler, William E.; and Tiemann, Jerome J., 4,280,066, Cl. 307-221.00D.

Timashov, Grigory A.: *See*—
Medovar, Boris I.; Baglai, Vitaly M.; Us, Vasily I.; Bogachenko, Alexei G.; Timashov, Grigory A.; Fedorovsky, Boris B.; Bondarenko, Oleg P.; Shtanko, Jury P.; Artamonov, Viktor L.; Pavlov, Leonid V.; Eltsov, Konstantin S.; Stetsenko, Nikolai V.; Kaganovsky, Gary P.; Korotkov, Albert N.; and Popov, Sergei S., 4,279,642, Cl. 75-10.00C.

Timoshin, Mikhail A.: *See*—
Zverev, Anatoly I.; Astakhov, Evgeny A.; Klimenko, Valery S.; Skadin, Vasily G.; and Timoshin, Mikhail A., 4,279,383, Cl. 239-61.000.

Tin, Lucas K., to Ampex Corporation. Digitally controlled automatic bias circuit for magnetic recording. 4,280,153, Cl. 360-66.000.

Tioxide Group Limited: *See*—
Tunstall, David F., 4,279,512, Cl. 356-335.000.

Tizard, Anthony N.: *See*—
Hill, Michael P. L.; and Tizard, Anthony N., 4,279,765, Cl. 252-117.000.
TMC Corporation: *See*—
Krob, Erwin; and Szasz, Tibor, 4,279,432, Cl. 280-605.000.
Tobioka, Masaaki: *See*—
Fujimori, Naoji; Tobioka, Masaaki; Asai, Tsuyoshi; Yamamoto, Takaharu; and Miyake, Masaya, 4,279,651, Cl. 75-233.000.
Tobita, Yuichi; and Okumura, Masamitsu, to Hitachi, Ltd. Device for trapping fuel vapor vaporized in fuel feed system of internal combustion engine. 4,279,233, Cl. 123-519.000.
Todd Overdrive Company: *See*—
Todd, William, 4,279,178, Cl. 74-745.000.
Todd, William, to Todd Overdrive Company. Overdrive gear arrangement. 4,279,178, Cl. 74-745.000.
Tojo, Tsutomu, to Olympus Optical Co., Ltd. Objective lens system for microscopes. 4,279,477, Cl. 350-414.000.
Tokhunts, Roman D.: *See*—
Buryakov, Valery M.; Kolotilov, Nikolai N.; Tokhunts, Roman D.; Yakovlev, Vladimir S.; Akulov, Vladislav A.; Zabotin, Viktor G.; Levin, Viktor Y.; Lukachev, Viktor P.; Pervyshin, Alexandr N.; Zaitsev, Konstantin A.; Karakov, Vladimir D.; and Khasanov, Mubaraksha D., 4,279,405, Cl. 266-55.000.
Tokuyama Soda Kabushiki Kaisha: *See*—
Izumi, Yusuke; Miyazaki, Hidetaka; and Kawahara, Shin-ichi, 4,279,883, Cl. 423-584.000.
Tokyo Electric Co., Ltd.: *See*—
Yokomori, Mituo; and Kawakami, Tsugimi, 4,280,063, Cl. 307-141.400.
Tokyo Shibaura Denki Electric Co., Ltd.: *See*—
Kohyama, Susumu, 4,280,067, Cl. 307-221.00D.
Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Fukatsu, Kunio, 4,280,036, Cl. 235-379.000.
Hidai, Yutaka; and Okuda, Nobuo, 4,280,186, Cl. 364-518.000.
Komatsu, Shigeru, 4,279,671, Cl. 148-188.000.
Shimotori, Kazumi; Izumi, Isao; and Murabayashi, ideki, 4,280,046, Cl. 219-544.000.
Takekoshi, Yoshikazu; and Yagisawa, Takeshi, 4,279,163, Cl. 73-761.000.
Tomco, Inc.: *See*—
Thompson, Vernon F., 4,279,145, Cl. 73-115.000.
Tomisawa, Takeshi: *See*—
Ohmukai, Yoshimi; Tomisawa, Takeshi; and Kawasaki, Yoshitaka, 4,279,589, Cl. 431-328.000.
Tomizawa, Choji: *See*—
Tanaka, Hiromichi; and Tomizawa, Choji, 4,279,950, Cl. 427-393.600.
Tomlinson, Geoffrey E. S.; and Dolman, Roy S., to White-BSA Tools Ltd. Multi-spindle lathes. 4,279,180, Cl. 82-1.00C.
Tooyama, Akira; Tooyama, Takashi; and Hosono, Takashi, to Sony Corporation. Beam index color television receiver apparatus. 4,280,134, Cl. 358-67.000.
Tooyama, Takashi: *See*—
Tooyama, Akira; Tooyama, Takashi; and Hosono, Takashi, 4,280,134, Cl. 358-67.000.
Top Tool Company, Inc.: *See*—
Weitz, Robert D., 4,279,306, Cl. 166-312.000.
Torisu, Masaaki: *See*—
Yamamoto, Ryuichi; and Torisu, Masaaki, 4,279,838, Cl. 260-968.000.
Torlay, Dwight L.: *See*—
Gana, John; and Torlay, Dwight L., 4,279,140, Cl. 72-237.000.
Tosaka, Yasuo: *See*—
Ogi, Keiji; Sasaki, Takashi; and Tosaka, Yasuo, 4,279,987, Cl. 430-409.000.
Tourville, Francis E.: *See*—
Tagg, Forrest L.; and Tourville, Francis E., 4,279,430, Cl. 280-439.000.
Toyoda Koki Kabushiki Kaisha: *See*—
Ito, Teruyuki; and Suzuki, Yasuo, 4,279,560, Cl. 414-589.000.
Toyoda, Tsunehiko: *See*—
Makishima, Hiroshi; Toyoda, Tsunehiko; Okamura, Noriaki; Yano, Hirofumi; Mizoguchi, Akira; and Hiromori, Yasutaka, 4,279,653, Cl. 106-22.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
Ando, Masahisa; Kato, Keigo; and Ishikawa, Tomozi, 4,279,323, Cl. 180-148.000.
Mikami, Teigo; Miyano, Hiroaki; and Kosugi, Masahide, 4,279,290, Cl. 164-154.000.
Okano, Hiroshi; and Gunji, Yoshihisa, 4,279,576, Cl. 417-407.000.
Onodera, Takayoshi, 4,279,428, Cl. 280-95.00R.
Trafford, Larry F.; and Thompson, John W. K., to General Signal Corporation. Fire alarm signal station. 4,280,120, Cl. 340-303.000.
Trapp, Werner: *See*—
Blumel, Reinhard; Denker, Jurgen; Markart, Ernst; Trapp, Werner; Tutzer, Michael; and Woznik, Reinhard, 4,279,514, Cl. 356-445.000.
Tremblay, Robert A.: *See*—
Labombarde, Raymond A.; and Tremblay, Robert A., 4,279,611, Cl. 493-418.000.
Treneules, Didier J.: *See*—
Leneveu, Louis J. J.; and Treneules, Didier J., 4,279,672, Cl. 149-19.800.
Tribe, Leonard T.: *See*—
Neill, Daniel L.; and Tribe, Leonard T., 4,279,162, Cl. 73-746.000.
Triponi, Doarde G.: *See*—
Daudi, Anwar; Golata, John H.; and Triponi, Doarde G., 4,279,287, Cl. 152-375.000.
Tropp, Burton E.: *See*—
Engel, Robert R.; Sarin, Virender K.; Gotlinksy, Barry; Tropp, Burton E.; and Parker, Thomas S., 4,279,898, Cl. 424-217.000.
Tseng, An-Teh. Umbrella. 4,279,265, Cl. 135-48.000.
Tseung, Alfred C. C.; and Man, Maurice C. M., to National Research Development Corporation. Method of catalyzing the evolution of gaseous hydrogen. 4,279,713, Cl. 204-129.000.
TSM Traitements de Surface et Mecanique: *See*—
Blanc, Jacques; Coulon, Andre; and Pellus, Gilbert, 4,279,706, Cl. 204-26.000.
Tsuchiya, Soji: *See*—
Matsuda, Shunsuke; Tsuchiya, Soji; Honma, Masami; and Nagamatsu, Gentaro, 4,279,984, Cl. 430-270.000.
Tsuda, Hidetoshi: *See*—
Kashima, Tsunehiro; Sakoda, Shunsuke; Tsuda, Hidetoshi; Hiramatsu, Tamihei; and Morita, Kazuyuki, 4,280,136, Cl. 358-93.000.
Tsugaya, Hitoshi: *See*—
Ishii, Kiyoshi; Honda, Zenjiro; and Tsugaya, Hitoshi, 4,279,846, Cl. 264-41.000.
Tsuji, Yoshiomi: *See*—
Suga, Kyozo; Iizuka, Jinya; and Tsuji, Yoshiomi, 4,279,540, Cl. 405-115.000.
Tsunekawa, Tokuichi; Sakane, Toshio; and Taguchi, Tatsuya, to Canon Kabushiki Kaisha. High speed image recording system. 4,280,151, Cl. 360-33.000.
Tsurumi, Shigeyuki: *See*—
Fujiwara, Koichi; Yamauchi, Coro; Arita, Kishio; and Tsurumi, Shigeyuki, 4,279,649, Cl. 75-173.00A.
Tsutsui, Kenziro; and Kakei, Masamitsu, to New Nippon Electric Co. Ltd. Magnetron. 4,280,078, Cl. 315-39.510.
Tsuzuki, Kunihiko; Ogasawara, Norio; and Ema, Shigeo, to Suzuki Jidosha Kogyo Kabushiki Kaisha. Fuel for internal combustion engines. 4,279,619, Cl. 44-56.000.
Tucker, Billy J., to Sangamo Weston, Inc. Optical inspection system for large parts and for multiple measurements. 4,279,513, Cl. 356-387.000.
Tumolo, Enzo: *See*—
Boggio, Francesco; Bertone, Andrea; and Tumolo, Enzo, 4,279,395, Cl. 246-182.00R.
Tunstall, David F., to Tioxide Group Limited. Method of measurement. 4,279,512, Cl. 356-335.000.
Turley, Wilfred H.; and Robinson, John A., to Plessey Handel und Investments AG. Optical fiber connectors. 4,279,468, Cl. 350-96.210.
Turly, Alfred P.: *See*—
McCann, David H; White, Marvin H.; Turly, Alfred P.; and Frosch, Robert A., 4,280,141, Cl. 358-213.000.
Turner & Newall Limited: *See*—
Winterbottom, Peter H., 4,279,695, Cl. 162-146.000.
Tutzer, Michael: *See*—
Blumel, Reinhard; Denker, Jurgen; Markart, Ernst; Trapp, Werner; Tutzer, Michael; and Woznik, Reinhard, 4,279,514, Cl. 356-445.000.
Tweedy, William H. Apparatus for aerating and maintaining an ice free surface area on a body of water. 4,279,537, Cl. 405-61.000.
Tyson, Don R., to Redken Laboratories, Inc. Illumination of replicas of biological surface tissue. 4,279,482, Cl. 353-65.000.
Ueda, Minoru: *See*—
Sueoka, Akinori; Okamoto, Takehiko; Ohmori, Akio; Kawai, Syuji; and Ueda, Minoru, 4,279,752, Cl. 210-500.200.
Uematsu, Michio: *See*—
Suganuma, Nobuo; Uematsu, Michio; Mandai, Hiroshi; Horiguchi, Yasunobu; and Masamizu, Koji, 4,279,888, Cl. 424-49.000.
Uesugi, Hiroaki: *See*—
Koiso, Kazuhiro; Sanda, Masaaki; Hayashi, Mamoru; and Uesugi, Hiroaki, 4,279,454, Cl. 312-297.000.
Ujita, Tuginobu: *See*—
Yotsumoto, Toshiyuki; Ujita, Tuginobu; and Shinohara, Eisaku, 4,279,324, Cl. 180-336.000.
Ukkonen, Keijo A.; and Simpura, Esa J., to Oy Kaukas AB. Process for the preparation of a β-sitosterol concentrate containing less than 5% by weight of α-sitosterol. 4,279,827, Cl. 260-397.250.
Umezawa, Hamao: *See*—
Oka, Yoshihiko; Ishida, Hitoshi; Morioka, Moto; Numusaki, Yoso; Yamafuji, Tsutomu; Osono, Takashi; and Umezawa, Hamao, 4,279,997, Cl. 435-80.000.
Union Siderurgique du Nord et De L'est De La France (USINOR): *See*—
Maisonnave, Pierre, 4,279,845, Cl. 264-30.000.
United Catalysts Inc.: *See*—
Dienes, Edward K.; Coleman, Ray L.; and Hausberger, Arthur L., 4,279,781, Cl. 252-463.000.
United States of America
Agriculture: *See*—
Anderson, Maynard E.; Marshall, Robert T.; and Stringer, William C., 4,279,059, Cl. 17-51.000.
Gray, Marie S.; and Cherry, John P., 4,279,811, Cl. 260-123.500.
Air Force: *See*—
Chao, Chente; Nakaji, Edward M.; and Bernick, Robert L., 4,279,070, Cl. 29-583.000.
Hawke, Merrill P.; Elizalde, Pete, Jr.; and Harris, Robert L., 4,279,164, Cl. 73-826.000.
Marcy, Robert D., 4,280,105, Cl. 331-94.50P.
Wilson, Paul, Jr., 4,279,382, Cl. 239-11.000.
Army: *See*—

Callender, Robert E.; Doyle, Loren C.; and Lightel, William J., 4,280,050, Cl. 250-330.000.
Gerharz, Reinhold, 4,280,055, Cl. 250-484.000.
Masak, Raymond J., 4,280,128, Cl. 343-100.0LE.
Energy: *See*—
Shuck, Lowell Z., 4,279,299, Cl. 166-60.000.
Environmental Protection Agency: *See*—
Bell, John P., 4,279,156, Cl. 73-863.220.
Health & Human Services: *See*—
Kutney, James P., 4,279,817, Cl. 260-244.400.
National Aeronautics and Space Administration; administrator; with respect to an invention of:
Brown, Patricia A.; and Danellis, Joan V. Indomethacin-antihistamine combination for gastric ulceration control. 4,279,906, Cl. 424-247.000.
Wang, Taylor G.; and Elleman, Daniel D. Method and apparatus for producing concentric hollow spheres. 4,279,632, Cl. 65-21.400.
Navy: *See*—
Carey, Richard L.; and McGuffey, Gale W., 4,280,097, Cl. 324-434.000.
Forman, Donald B., 4,279,469, Cl. 350-96.220.
Francavilla, Thomas L.; and Wolf, Stuart A., 4,279,969, Cl. 428-698.000.
Hinton, George F., 4,280,095, Cl. 324-248.000.
Hobson, Michael J., 4,279,403, Cl. 251-148.000.
Marshall, Albert H.; and Derderian, George, 4,279,599, Cl. 434-21.000.
Swiatosz, Edmund, 4,279,292, Cl. 165-61.000.
U.S. Philips Corporation: *See*—
de Niet, Edmond, 4,280,158, Cl. 360-113.000.
Haes, Freddy; Hermes, Guillaume M. P. G.; and Reijnhoat, Cornelis M., 4,279,253, Cl. 128-355.000.
Schomberg, Hermann; and Tasto, Manfred, 4,279,157, Cl. 73-618.000.
Snijder, Pieter J., 4,280,068, Cl. 307-221.00D.
van de Plassche, Rudy J.; and Dijkmans, Eise C., 4,280,089, Cl. 323-354.000.
Werner, Helmut W. W.; Witmer, Antonius W.; and Knippenberg, Wilhelmus F., 4,280,049, Cl. 250-310.000.
United States Steel Corporation: *See*—
Gana, John; and Torlay, Dwight L., 4,279,140, Cl. 72-237.000.
Pringle, William L., 4,279,131, Cl. 64-21.000.
United Technologies Corporation: *See*—
Adams, Don L.; Murphy, Richard D.; and Fischer, William C., 4,279,391, Cl. 244-17.130.
Auriemma, Peter R., 4,279,572, Cl. 416-220.00R.
Fitzpatrick, Peter R.; Meyerand, Russell G., Jr.; and Shotwell, Kenneth E., 4,279,294, Cl. 165-45.000.
Griffin, James G.; and Schwarz, Frederick M., 4,279,123, Cl. 60-226.00R.
Martin, Anthony N., 4,280,185, Cl. 364-506.000.
Munroe, Alan D., 4,279,568, Cl. 415-17.000.
Ryan, Edward J.; Rutz, David A.; and Lee, Jack W., 4,279,121, Cl. 57-258.000.
Zickwolf, Herbert C., Jr., 4,280,059, Cl. 290-40.00B.
Universal Corrugated Box Machinery Holding AG: *See*—
Smolders, Cees J., 4,279,184, Cl. 83-302.000.
Universal Pioneer Corporation: *See*—
Okano, Takashi, 4,280,215, Cl. 369-45.000.
University of Birmingham: *See*—
Bradwell, Arthur R.; and Burnett, David, 4,279,884, Cl. 424-1.000.
University of California, The Regents of the: *See*—
Fahmy, Mohamed A. H.; and Fukuto, Tetsuo R., 4,279,897, Cl. 424-211.000.
Henderson, Jerald M.; and Yong, Yuen-Cjen, 4,279,336, Cl. 198-443.000.
Osada, Yoshihito; Bell, Alexis T.; and Shen, Mitchel M., 4,279,723, Cl. 204-164.000.
University of Nebraska, The Board of Regents of the: *See*—
Shahani, Khemchand M.; Wagner, Frederick W.; and Kilara, Arun, 4,279,998, Cl. 435-174.000.
University of Pittsburgh: *See*—
DelVecchio, Robert M.; and Meiksin, Zvi H., 4,280,114, Cl. 338-2.000.
University of Utah: *See*—
Miller, Jan D., 4,279,743, Cl. 209-211.000.
University Patents, Inc.: *See*—
Allen, Robert H., 4,279,886, Cl. 424-1.000.
Coughlin, Robert W., 4,279,710, Cl. 204-101.000.
Unmuth, George E., to Petrolite Corporation. Laminating composition and uses. 4,279,659, Cl. 106-230.000.
Upjohn Company, The: *See*—
Hall, Charles M.; and Glenn, Eldridge M., 4,279,930, Cl. 424-331.000.
Nelson, Stephen J., 4,279,839, Cl. 260-968.000.
Nelson, Stephen J., 4,279,840, Cl. 260-968.000.
Urahama, Yoshiaki; and Numoto, Tetuo, to Nitto Electric Industrial Co., Ltd. Resin molded productions designed to display extinction of activity. 4,279,213, Cl. 116-200.000.
Urayama, Kiyoshi: *See*—
Yokoyama, Tohei; Asakura, Shintaro; Urayama, Kiyoshi; and Fujii, Kenji, 4,279,165, Cl. 73-826.000.
Ursprung, Karl; and Zimmermann, Franz, to Gretag Aktiengesellschaft. Method for print exposure control. 4,279,505, Cl. 355-77.000.
Us, Vasily I.: *See*—
Medovar, Boris I.; Baglai, Vitaly M.; Us, Vasily I.; Bogachenko, Alexei G.; Timashov, Grigory A.; Fedorovsky, Boris B.; Bondarenko, Oleg P.; Shtanko, Jury P.; Artamonov, Viktor L.; Pavlov, Leonid V.; Eltsov, Konstantin S.; Stetsenko, Nikolai V.; Kaganovsky, Gary P.; Korotkov, Albert N.; and Popov, Sergei S., 4,279,642, Cl. 75-10.00C.
Vaeches, Theodore A., to Fairchild Camera & Instrument Corp. Electronic testing system. 4,280,220, Cl. 371-27.000.
Valenta, James D.; and Heruth, Kenneth T., to Airco, Inc. Drug nebulizing system for medical ventilators of the volume-limited type. 4,279,250, Cl. 128-200.140.
Vance, Henry T., Jr.: *See*—
Baker, Philip G.; Fitch, John K.; and Vance, Henry T., Jr., 4,279,487, Cl. 354-79.000.
van de Plassche, Rudy J.; and Dijkmans, Eise C., to U.S. Philips Corporation. Automatic incrementing attenuation arrangement. 4,280,089, Cl. 323-354.000.
Van Der Lely, Cornelis; and Bom, Cornelis J. G., to C. Van Der Lely N. V. Vehicle with a lifting device responsive to ground irregularities. 4,279,138, Cl. 172-4.000.
van der Lely, Cornelis. Soil working machine. 4,279,310, Cl. 172-47.000.
van Heijst, Willem J., to Bluewater Terminal Systems N.V. Fluid transfer body. 4,279,047, Cl. 9-8.00P.
Vanis, Vernon V.: *See*—
Martin, Billy P.; and Vanis, Vernon V., 4,279,449, Cl. 305-35.0EB.
Van Pelt, Robert. Lunch box employing a built-in radio receiver. 4,279,342, Cl. 206-542.000.
Varian Associates, Inc.: *See*—
Bell, Ronald L., 4,280,074, Cl. 310-306.000.
Guarino, Nicholas, 4,280,054, Cl. 250-440.000.
VDO Adolf Schindling AG: *See*—
Mann, Arnold, 4,279,228, Cl. 123-352.000.
Velenyi, Louis J.; and Krupa, Andrew S., to Standard Oil Company, The. Molybdenum-copper-tin catalysts. 4,279,777, Cl. 252-439.000.
Velenyi, Louis J.; Paparizos, Christos; and Dolhyj, Serge R., to Standard Oil Company, The. Metal complex catalysts. 4,279,829, Cl. 260-429.900.
Velsicol Chemical Corporation: *See*—
Wu, Frank, 4,279,637, Cl. 71-92.000.
Venkatasetty, Hanumanthiya V., to Honeywell Inc. Electrochemical cell. 4,279,973, Cl. 429-101.000.
Vente, Paul; Seidenschnur, Dieter; Knipp, Ulrich; and Spenner, Anton, to Bayer Aktiengesellschaft. Method and an apparatus for assembling and removing a segmented tire mold core in a tire mold. 4,279,856, Cl. 264-313.000.
Veradyne Corp.: *See*—
Veraldi, S. James, 4,280,098, Cl. 328-59.000.
Veraldi, S. James, to Veradyne Corp. Coaxial spark gap switch. 4,280,098, Cl. 328-59.000.
Verdy, Robert E. Hoisting apparatus for pleasure boats. 4,279,565, Cl. 414-678.000.
Vereinigte Flugtechnische Werke-Fokker GmbH: *See*—
Seidenfaden, Heinz, 4,279,554, Cl. 409-180.000.
Vermont Castings, Inc.: *See*—
Syme, Duncan C., 4,279,238, Cl. 126-77.000.
Versar, Inc.: *See*—
Barden, James D., 4,279,618, Cl. 23-232.00R.
Shaver, Robert G.; and Leake, William R., 4,279,702, Cl. 202-137.000.
Vert, Michel; Chabot, Francois; Leray, Jean; and Christel, Pascal, to Agence Nationale de Valorisation de la Recherche (ANVAR); and Institut National de la Sante et de la Recherche Medicale. New prosthesis parts, their preparation and their application. 4,279,249, Cl. 128-92.00D.
Vertes, Michael A. Container cap. 4,279,351, Cl. 215-231.000.
Verwaerde, Francoise; Leleu, Jean-Bernard; and Huchette, Michel, to Roquette Freres. Non-cariogenic hydrogenated starch hydrolysate for confectionery and process for preparing this hydrolysate. 4,279,931, Cl. 426-48.000.
Vesperman, William C.: *See*—
Lueddecke, Donald E.; Mottine, John J., Jr.; and Vesperman, William C., 4,279,789, Cl. 260-17.00R.
Victory Games, Inc.: *See*—
Barnes, George A.; and Perhacs, Leslie, Jr., 4,279,419, Cl. 273-87.400.
Viehrig, Wolfgang: *See*—
Stemme, Otto; Fergg, Berthold; Osegowitsch, Viktor; and Viehrig, Wolfgang, 4,279,491, Cl. 355-27.000.
Villanyi, Sigmund T., to RCA Corporation. Cathode-ray tube having corrugated shadow mask with varying waveform. 4,280,077, Cl. 313-402.000.
Villette, Jean, to Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme). Lightly loaded ramp-launched read/write device for a data carrier. 4,280,156, Cl. 360-105.000.
Vining, Paul H.; Scott, Jack A.; and Duby, Paul F. Aqueous electrowinning of metals. 4,279,711, Cl. 204-105.00R.
Vitale, Joseph, to PRF Corporation. Corner pocket for securing mattress covers and the like. 4,279,045, Cl. 5-497.000.
Vivat, Michel: *See*—
Buendia, Jean; and Vivat, Michel, 4,279,919, Cl. 424-279.000.
Vodicka, Vincent: *See*—
Bradley, Irving; and Vodicka, Vincent, 4,280,173, Cl. 362-294.000.
Voegeli, Otto, to International Business Machines Corporation. Parametric bubble detector. 4,280,194, Cl. 365-7.000.

Voit, Willi: *See*—
Straubel, Max; and Voit, Willi, 4,279,385, Cl. 239-90.000.

Vojvodich, Mario M., to Singer Company, The. Device for transmitting and receiving optical data on the same optical transmission line. 4,279,465, Cl. 350-96.200.

Volker, Wolfgang: *See*—
Buchmuller, Jurgen; Nobis, Peter; and Volker, Wolfgang, 4,279,626, Cl. 55-204.000.

Volpeliere, Jacky: *See*—
Hanrot, Jean-Pascal; and Volpeliere, Jacky, 4,279,549, Cl. 406-14.000.

Von Roll AG: *See*—
Zeltner, Erich, 4,279,516, Cl. 366-171.000.

Von Kohorn, Henry. Method for leaching metal bearing ores. 4,279,868, Cl. 423-29.000.

von Wichert, Nils; and Schwenke, Dieter, to Hauni-Werke Korber & Co. KG. Method and apparatus for making collapsible containers. 4,279,609, Cl. 493-276.000.

Vrisakis, Georges: *See*—
Joubert, Daniel; and Vrisakis, Georges, 4,279,766, Cl. 252-174.250.

W. H. Brady Co.: *See*—
Arnold, John, 4,279,359, Cl. 221-70.000.

W. R. Grace & Co.: *See*—
Hill, Richard N.; and Sanchez, Moises G., 4,279,877, Cl. 423-321.00R.
Sanchez, Moises G.; Ernest, Michael V.; and Laine, Norman R., 4,279,779, Cl. 252-448.000.
Winyall, Milton E.; and Davidoff, Charles, 4,279,879, Cl. 423-335.000.

WABCO Westinghouse Compagnia Italiana Segnali S.p.A.: *See*—
Boggio, Francesco; Bertone, Andrea; and Tumolo, Enzo, 4,279,395, Cl. 246-182.00R.

Wachi, Hiroshi: *See*—
Ashida, Eiji; Nihei, Masayasu; Wachi, Hiroshi; Sato, Akira; and Kokura, Satoshi, 4,280,137, Cl. 358-101.000.

Wadden, Marie-Claire. Process for preparing works of art. 4,279,674, Cl. 156-62.000.

Wagener, Dietrich; Horst, Fach; and Ergun, Hayri, to Didier Engineering GmbH. Process and apparatus for the thermal treatment of coal. 4,280,033, Cl. 219-10.55A.

Wagensonner, Eduard: *See*—
Stemme, Otto; Wagensonner, Eduard; and Ruf, Wolfgang, 4,280,142, Cl. 358-214.000.

Wagner, Frederick W.: *See*—
Shahani, Khemchand M.; Wagner, Frederick W.; and Kilara, Arun, 4,279,998, Cl. 435-174.000.

Wain-Roy, Inc.: *See*—
Arnold, Carroll H., 4,279,085, Cl. 37-103.000.

Waits, Douglas B.: *See*—
Mart, Carl F.; and Waits, Douglas B., 4,280,201, Cl. 367-56.000.

Wakana, Hiroshi; Yamada, Shigeru; and Sato, Akira, to Bridgestone Tire Co., Ltd. Pressure resistant square panel. 4,279,966, Cl. 428-595.000.

Waldawsky-Berger, Irving: *See*—
Schorr, Herbert; and Waldawsky-Berger, Irving, 4,280,177, Cl. 364-200.000.

Walker, Gary W. Soft playing disc. 4,279,097, Cl. 46-74.00D.

Walker, Loren H.: *See*—
Cutler, John H.; and Walker, Loren H., 4,280,085, Cl. 318-803.000.

Wallace, Richard B., to Oakland Corporation, The. Method of providing ring patch for nuts. 4,279,943, Cl. 427-57.000.

Wallner, Josef; and Metzinger, Lothar, to Elastogran Maschinenbau GmbH & Co. Mixing apparatus for chemically reacting fluid components, particularly polyurethane-forming components. 4,279,517, Cl. 366-177.000.

Walsh, Peter, to Duro-Test Corporation. Incandescent lamp with structure for collecting evaporated filament material. 4,280,076, Cl. 313-114.000.

Walter Kidde & Company, Inc.: *See*—
Pottorff, Donald R.; and Galmiche, Rene G., 4,279,330, Cl. 188-71.700.

Walz, Klaus: *See*—
Schulze, Hans; Walz, Klaus; Jakobs, Karlhans; and Boehmke, Gunther, 4,279,614, Cl. 8-533.000.

Wambach, Allen D.: *See*—
Kramer, Morton; and Wambach, Allen D., 4,279,801, Cl. 260-40.00R.

Wang Laboratories, Inc.: *See*—
Wu, Edward S.; and Soulard, Roger R., 4,279,390, Cl. 242-192.000.

Wang, Taylor G.: *See*—
United States of America, National Aeronautics and Space Administration; Wang, Taylor G.; and Elleman, Daniel D., 4,279,632, Cl. 65-21.400.

Ward, Gary A., to Baxter Travenol Laboratories, Inc. Molded injection site. 4,279,352, Cl. 215-247.000.

Ward, William J., III, to General Electric Company. Method for the casting of ultrathin polymer membranes. 4,279,855, Cl. 264-298.000.

Wareham, Richard R.: *See*—
Cocco, Vincent L.; Norris, Philip R.; and Wareham, Richard R., 4,279,503, Cl. 355-45.000.

Warheit, Kevin E.: *See*—
Hough, William V.; Little, John L.; and Warheit, Kevin E., 4,279,951, Cl. 427-437.000.

Warren, Richard A. Ventilating ladder. 4,279,327, Cl. 182-206.000.

Watanabe, Toshio: *See*—
Kojima, Kenji; Ota, Sakae; Katsumata, Akio; Kameyama, Toshiaki; Watanabe, Toshio; and Koike, Tadao, 4,279,501, Cl. 355-15.000.

Watari, Masahide: *See*—
Ebata, Sakae; Watari, Masahide; Hayakumo, Sunao; and Oyamada, Osamu, 4,279,701, Cl. 176-87.000.

Watson, Louis L., Jr. Methods for forming thinwall structures. 4,279,680, Cl. 156-212.000.

Watton, John F.: *See*—
Chapman, Lloyd R.; and Watton, John F., 4,279,782, Cl. 252-465.000.

Webb, Austin A.: *See*—
Settlemire, Eugene F., 4,280,035, Cl. 235-94.00R.

Weber, Charles J.: *See*—
Blanco, Abelardo D.; Boynton, William W.; and Weber, Charles J., 4,279,199, Cl. 101-93.050.

Weber, Heinz: *See*—
Ivanov, Rumen V.; Nikolov, Dobrin V.; Bilsing, Ulrich; Weber, Heinz; and Schmidt, Manfred, 4,279,742, Cl. 209-166.000.

Weber, Walter, to Siemens Aktiengesellschaft. Dental handpiece. 4,279,596, Cl. 433-126.000.

Webinger, George, to Champion International Corporation. Adhesive-free tray with interlocking tabs and blank therefor. 4,279,374, Cl. 229-34.00R.

Webinger, George: *See*—
Austin, John J.; and Webinger, George, 4,279,933, Cl. 426-124.000.

Wegmann & Co.: *See*—
Dieling, Hans; and Schindehutte, Manfred, 4,279,202, Cl. 105-206.00R.

Wehrsdorfer, Eike: *See*—
Karthe, Wolfgang; and Wehrsdorfer, Eike, 4,280,096, Cl. 324-316.000.

Weiner, Nathan K.; Weyman, Peter J.; and Ketchum, David D., to Electronic Corporation of America. Burner flame detection. 4,280,184, Cl. 364-506.000.

Weinert, Harry F., to Cascade Corporation. Parallel arm clamp having improved attaching assembly for narrow clamp arms. 4,279,564, Cl. 414-621.000.

Weinstein, Warren D.; Boudreau, Jean A.; and Gertz, Donald, to Grumman Aerospace Corporation. Survivable redundant vector sensors for systems with differing maximum output requirements. 4,280,188, Cl. 364-566.000.

Weir, Donald R., to Sherritt Gordon Mines Limited. Process for the recovery of copper and zinc values from sulphidic ore. 4,279,867, Cl. 423-26.000.

Weiss, Donald E.; Kolarik, Luis O.; Priestley, Anthony J.; and Anderson, Nevil J., to Commonwealth Scientific and Industrial Research Organization. Water clarification. 4,279,756, Cl. 210-667.000.

Weiss, Stuart L.: *See*—
Lazarus, Arnold; and Weiss, Stuart L., 4,280,018, Cl. 179-1.00M.

Weitz, Robert D., to Top Tool Company, Inc. Well washing tool and method. 4,279,306, Cl. 166-312.000.

Wella Aktiengesellschaft: *See*—
Konrad, Eugen; and Mager, Herbert, 4,279,613, Cl. 8-407.000.

Wellbrock, Werner, to Hoechst Aktiengesellschaft. Process for the preparation of alkaline earth metal salts of alkyl benzenesulfonic acids. 4,279,837, Cl. 260-505.00N.

Wellner, Wolfgang; and Hajek, Manfred, to Bayer Aktiengesellschaft. Water-hardenable mixtures. 4,279,793, Cl. 260-18.00R.

Wells, Donald H. Variable mutual transductance tuned antenna. 4,280,129, Cl. 343-715.000.

Wells, Peter M., Jr.; and Mitchell, Roger E., to Ideal Industries, Inc. Ground fault interrupter tester. 4,280,092, Cl. 324-51.000.

Weresch, Thomas. Apparatus for stringing electrical components having two aligned connecting wires into a belt. 4,279,278, Cl. 140-147.000.

Wermelinger, Alain: *See*—
Bourhis, Yves; Wermelinger, Alain; and Kostelitz, Michel, 4,279,406, Cl. 266-81.000.

Werner, Helmut W. W.; Witmer, Antonius W.; and Knippenberg, Wilhelmus F., to U.S. Philips Corporation. X-ray spectrometer. 4,280,049, Cl. 250-310.000.

Weslowski, Robert G.: *See*—
Schevey, William R.; Weslowski, Robert G.; and Morentz, John D., 4,279,279, Cl. 141-5.000.

Wessel, Wolf; and Handtmann, Dieter, to Robert Bosch GmbH. Apparatus for measuring the air quantity supplied to an internal combustion engine. 4,279,146, Cl. 73-118.000.

Wessel, Wolf: *See*—
Flaig, Ulrich; Piwonda, Fridolin; Stumpp, Gerhard; and Wessel, Wolf, 4,279,235, Cl. 123-569.000.

Western Electric Company, Inc.: *See*—
Lord, Herbert A.; and Schneider, Randy G., 4,279,851, Cl. 264-174.000.
Lueddecke, Donald E.; Mottine, John J., Jr.; and Vesperman, William C., 4,279,789, Cl. 260-17.00R.

Westinghouse Electric Corp.: *See*—
Boyle, Raymond F.; and Durigon, Docile D., 4,279,700, Cl. 176-68.000.
Eckels, Phillip W., 4,280,071, Cl. 310-52.000.
Gilmour, George A., 4,280,203, Cl. 367-103.000.
Koump, Valentin, 4,279,293, Cl. 165-82.000.
Lee, Henry E.; Guillen, Francisco J.; and Longuemare, R. Noel, Jr., 4,280,127, Cl. 343-5.0CM.
McIntyre, William H., 4,279,142, Cl. 73-1.00G.

Wey, Joseph; Sidler, Hans; and Stalder, Hans, to Sistag, Maschinenfabrik Sidler Stalder AG. Explosion barring shutoff device. 4,279,402, Cl. 251-63.000.

Weyman, Peter J.: *See*—
Weiner, Nathan K.; Weyman, Peter J.; and Ketchum, David D., 4,280,184, Cl. 364-506.000.

Wheelabrator Corporation of Canada Limited: *See*—
Bartels, Bruce E., 4,279,956, Cl. 428-192.000.

Wheeler, Raymond L.; Henry, John; and Dadswell, John E., to British Hovercraft Corporation Limited. Air cushion vehicle flexible skirt assemblies. 4,279,322, Cl. 180-128.000.

Whirlpool Corporation: *See*—
Johnson, Milton J., 4,279,198, Cl. 100-229.00A.

White-BSA Tools Ltd.: *See*—
Tomlinson, Geoffrey E. S.; and Dolman, Roy S., 4,279,180, Cl. 82-1.00C.

White, George H.; and Petersen, Donald J., to National Gypsum Company. Hard-edge wallboard. 4,279,673, Cl. 156-39.000.

White, Kenneth T., to Chemetron Corporation. Liquid level detector. 4,280,126, Cl. 340-621.000.

White, Lionel S., Jr.: *See*—
Reese, Edmund A.; White, Lionel S., Jr.; and McAlexander, Joseph C., III, 4,280,070, Cl. 307-279.000.

White, Marvin H.: *See*—
McCann, David H; White, Marvin H.; Turly, Alfred P.; and Frosch, Robert A., 4,280,141, Cl. 358-213.000.

Whyte, Robert N. Barrel hoop drivers. 4,279,282, Cl. 147-9.000.

Wichmann, Joseph K.: *See*—
DeLuca, Hector F.; Schnoes, Heinrich K.; Tanaka, Yoko; and Wichmann, Joseph K., 4,279,826, Cl. 260-397.200.

Wiedmann, Siegfried K.: *See*—
Heuber, Klaus; and Wiedmann, Siegfried K., 4,280,198, Cl. 365-203.000.

Wilczewski, Robert H.: *See*—
Blomquist, James E.; and Wilczewski, Robert H., 4,279,518, Cl. 400-124.000.

Wilhelm Hedrich Vakuumanlagen GmbH & Co. K.G.: *See*—
Hauser, Erhard, 4,279,360, Cl. 222-1.000.

Wilkinson, Ralph A.: *See*—
Woods, Leodis V.; Stassi, Paul; and Wilkinson, Ralph A., 4,279,995, Cl. 435-38.000.

Willamette Industries, Inc.: *See*—
Jenkins, Donald E., 4,279,378, Cl. 229-39.00R.

Willem, Michel, to Societe Anonyme dite: Ceraver. Multiple-dielectric insulator. 4,280,017, Cl. 174-182.000.

William H. Rorer, Inc.: *See*—
Riley, Richard L.; Douglas, George H.; and Yelnosky, John, 4,279,928, Cl. 424-324.000.

William Underwood Company: *See*—
Jones, Dorothy L.; and Conant, Frank R., 4,279,936, Cl. 426-265.000.

Williams, Thomas E., to Texaco Inc. Method for improving the effective permeability of formations. 4,279,301, Cl. 166-250.000.

Willis, Arthur J., to BICC Limited. Communication systems for transportation undertakings. 4,280,225, Cl. 455-55.000.

Willy Rusch GmbH & Co. KG: *See*—
Rusch, Heinz, 4,279,251, Cl. 128-348.000.

Wilson, Joseph G. Downflow separator method and apparatus. 4,279,624, Cl. 55-1.000.

Wilson, Paul, Jr., to United States of America, Air Force. Radial and axial flow variable exhaust nozzle for a gas turbine engine. 4,279,382, Cl. 239-11.000.

Wilterding, Jerry L. Hole saw pilot pin with plug retrieval mechanism. 4,279,551, Cl. 408-67.000.

Wiltshire Cutlery Company Proprietary Limited: *See*—
Jackson, Dennis B., 4,279,076, Cl. 30-254.000.

Winchell, Harry S.: *See*—
Baldwin, Ronald M.; Lin, Tz-Hong; and Winchell, Harry S., 4,279,887, Cl. 424-1.500.

Windmoller & Holscher: *See*—
Achelpohl, Fritz; and Decker, Werner, 4,279,686, Cl. 156-517.000.

Wing, Steven D.; and Smith, Richard E., to National Gypsum Company. Wallboard T-square. 4,279,081, Cl. 33-479.000.

Winter, David F.: *See*—
Bussen, Michael R.; and Winter, David F., 4,279,461, Cl. 339-246.000.

Winterbottom, Peter H., to Turner & Newall Limited. Process for the manufacture of composite materials. 4,279,695, Cl. 162-146.000.

Winters, Richard D., to Great Lakes Carbon Corporation. Production of stabilized acrylic fibers. 4,279,612, Cl. 8-115.500.

Winyall, Milton E.; and Davidoff, Charles, to W. R. Grace & Co. Silica gel. 4,279,879, Cl. 423-335.000.

Wirsch, Michael J., to Exxon Production Research Company. Treating fluid applicator. 4,279,300, Cl. 166-90.000.

Wirth, Hermann O.: *See*—
Michaelis, Klaus P.; and Wirth, Hermann O., 4,279,761, Cl. 252-46.400.

Wirth Maschinen- und Bohrgerate-Fabrik GmbH: *See*—
Tibussek, Fritz, 4,279,315, Cl. 175-249.000.

Wirth, Walter, to Hergeth KG Maschinenfabrik und Apparatebau. Method of and apparatus for the production of open non-woven fabric from fibrous material. 4,279,060, Cl. 19-106.00R.

Wisconsin Alumni Research Foundation: *See*—
DeLuca, Hector F.; Schnoes, Heinrich K.; Tanaka, Yoko; and Wichmann, Joseph K., 4,279,826, Cl. 260-397.200.

Witmer, Antonius W.: *See*—
Werner, Helmut W. W.; Witmer, Antonius W.; and Knippenberg, W :helmus F., 4,280,049, Cl. 250-310.000.

Witte, Josef: *See*—
Overhoff, Theodor; Schulten, Rudolf; Singh, Jasbir; Sylvester, Gerd; and Witte, Josef, 4,279,697, Cl. 176-22.000.

Woinsky, Samuel G., to Occidental Research Corporation. Process and system for recovery of energy from geothermal brines and other hot water containing sources. 4,279,125, Cl. 60-641.500.

Wolf, Klaus-Ullrich: *See*—
Ohlendorf, Heinrich-Wilhel.n; Wolf, Klaus-Ullrich; Kaupmann, Wilhelm; and Heinemann, Henning, 4,279,904, Cl. 424-246.000.
Ohlendorf, Heinrich-Wilhelm; Wolf, Klaus-Ullrich; and Kaupmann, Wilhelm, 4,279,905, Cl. 424-246.000.

Wolf, Stuart A.: *See*—
Francavilla, Thomas L.; and Wolf, Stuart A., 4,279,969, Cl. 428-698.000.

Woodall, Roger E.: *See*—
Anderson, Martin; and Woodall, Roger E., 4,279,903, Cl. 424-246.000.

Woods, Leodis V.; Stassi, Paul; and Wilkinson, Ralph A., to McDonnell Douglas Corporation. Selective salmonella carbohydrate and medium constructed therefrom. 4,279,995, Cl. 435-38.000.

Wooldridge, Derek: *See*—
Burroughs, Reginald L.; Thompson, William J.; and Wooldridge, Derek, 4,279,663, Cl. 127-1.000.

Wormser, Alex F., to Wormser Engineering, Inc. Fluid bed combustion. 4,279,207, Cl. 110-345.000.

Wormser, Alex F.: *See*—
Perkins, Stephen P.; and Wormser, Alex F., 4,279,205, Cl. 110-245.000.

Wormser Engineering, Inc.: *See*—
Perkins, Stephen P.; and Wormser, Alex F., 4,279,205, Cl. 110-245.000.
Wormser, Alex F., 4,279,207, Cl. 110-345.000.

Woznik, Reinhard: *See*—
Blumel, Reinhard; Denker, Jurgen; Markart, Ernst; Trapp, Werner; Tutzer, Michael; and Woznik, Reinhard, 4,279,514, Cl. 356-445.000.

Wu, Edward S.; and Soulard, Roger R., to Wang Laboratories, Inc. Ribbon cartridge. 4,279,390, Cl. 242-192.000.

Wu, Frank, to Velsicol Chemical Corporation. Herbicidal N-substituted 4-imidazolin-2-ones. 4,279,637, Cl. 71-92.000.

Wuertele, James W. Corrosion detector. 4,280,124, Cl. 340-650.000.

Wunderlich, Winfried: *See*—
Hitzler, Otto; and Wunderlich, Winfried, 4,279,719, Cl. 204-159.230.

Wurmb, Rolf: *See*—
DeBeuckelaer, Gerard; Jarre, Wolfgang; Wurmb, Rolf; and Marx, Matthias, 4,279,757, Cl. 210-671.000.

Wurzburg, Otto B.; and Lenchin, Julianne M., to National Starch and Chemical Corporation. Clouding with a starch material. 4,279,940, Cl. 426-590.000.

WWG Industries, Inc.: *See*—
Norris, Alan H., 4,279,120, Cl. 57-204.000.

Wyler, John S.; and Pfuntner, Richard A., to General Electric Company. Mass rate of flow meter with electromagnetic interference compensation. 4,279,168, Cl. 73-861.350.

Wymer, Robert L.; and Prater, Perry, to Energy Synergistics, Inc. Apparatus for drying a natural gas stream. 4,279,628, Cl. 55-238.000.

Wyoming Mineral Corporation: *See*—
Smith, Richard C., 4,280,048, Cl. 250-264.000.

Xerox Corporation: *See*—
Kazan, Benjamin, 4,280,125, Cl. 340-795.000.
Rezanka, Ivan; and Lindblad, Nero R., 4,279,499, Cl. 355-15.000.
Scifres, Donald R.; Burnham, Robert D.; and Streifer, William, 4,280,106, Cl. 331-94.50H.
Scifres, Donald R.; Ponce, Fernando A.; Connell, G. A. Neville; and Streifer, William, 4,280,107, Cl. 331-94.50H.
Scifres, Donald R.; Burnham, Robert D.; and Streifer, William, 4,280,108, Cl. 331-94.50H.
Silverberg, Morton, 4,279,496, Cl. 355-3.0BE.

Yagi, Kouichi; and Nakagawa, Yunosuke, to Kao Soap Co., Ltd. Bleaching composition. 4,279,769, Cl. 252-186.000.

Yagisawa, Takeshi: *See*—
Takekoshi, Yoshikazu; and Yagisawa, Takeshi, 4,279,163, Cl. 73-761.000.

Yajima, Seishi; Okamura, Kiyohito; Shishido, Toetsu; and Hasegawa, Yoshio, to Foundation: The Research Institute for Special Inorganic Materials, The. Process for production of crystallized glass and process for producing composite article using said crystallized glass. 4,279,654, Cl. 106-39.600.

Yakovlev, Vladimir S.: *See*—
Buryakov, Valery M.; Kolotilov, Nikolai N.; Tokhunts, Roman D.; Yakovlev, Vladimir S.; Akulov, Vladislav A.; Zabotin, Viktor G.; Levin, Viktor Y.; Lukachev, Viktor P.; Pervyshin, Alexandr N.; Zaitsev, Konstantin A.; Karakov, Vladimir D.; and Khasanov, Mubaraksha D., 4,279,405, Cl. 266-55.000.

Yamada, Shigeru: *See*—
Wakana, Hiroshi; Yamada, Shigeru; and Sato, Akira, 4,279,966, Cl. 428-595.000.

Yamada, Yasuharu: *See*—
Shiga, Akinobu; Fukui, Yoshiharu; Hanji, Katsumi; Sasaki, Toshio; Okawa, Masahisa; Matsuura, Hideaki; and Yamada, Yasuharu, 4,279,776, Cl. 252-429.00B.

Yamafuji, Tsutomu: *See*—
Oka, Yoshihiko; Ishida, Hitoshi; Morioka, Moto; Numusaki, Yoso; Yamafuji, Tsutomu; Osono, Takashi; and Umezawa, Hamao, 4,279,997, Cl. 435-80.000.
Yamaguchi, Keiki; and Sano, Shinichi, to Yokogawa Electric Works, Ltd. Signal isolator. 4,280,064, Cl. 307-149.000.
Yamakawa, Yoshio: *See*—
Nakamura, Yasuhiko; and Yamakawa, Yoshio, 4,279,630, Cl. 55-316.000.
Yamamoto, Kunio, to Sharp Kabushiki Kaisha. Steam generation in a dishwasher. 4,279,384, Cl. 239-67.000.
Yamamoto, Ryuichi; and Torisu, Masaaki, to Mitsui Toatsu Chemicals Inc. Process for the preparation of aminoaryl thiophosphates and aminoaryl phosphates. 4,279,838, Cl. 260-968.000.
Yamamoto, Samuroh. Process and apparatus for continuous cake filteration under pressure. 4,279,760, Cl. 210-784.000.
Yamamoto, Takaharu: *See*—
Fujimori, Naoji; Tobioka, Masaaki; Asai, Tsuyoshi; Yamamoto, Takaharu; and Miyake, Masaya, 4,279,651, Cl. 75-233.000.
Yamana, Toru, to Murakami Kaimeido Co., Ltd. Remote control mechanism. 4,279,473, Cl. 350-307.000.
Yamanouchi Pharmaceutical Co., Ltd.: *See*—
Oka, Yoshihiko; Ishida, Hitoshi; Morioka, Moto; Numusaki, Yoso; Yamafuji, Tsutomu; Osono, Takashi; and Umezawa, Hamao, 4,279,997, Cl. 435-80.000.
Yamashita, Masaaki. Variable speed transmission. 4,279,177, Cl. 74-675.000.
Yamashita, Shuzo; Shibatani, Kyoichiro; Takakura, Kiochi; and Imai, Kiyokazu, to Kuraray Co., Ltd. Hydrophilic-hydrophobic graft copolymers for self-reinforcing hydrogels. 4,279,795, Cl. 260-29.6RW.
Yamashita, Yukio. Automatic mold goods dropping device in an injection molding machine. 4,279,586, Cl. 425-438.000.
Yamauchi, Coro: *See*—
Fujiwara, Koichi; Yamauchi, Coro; Arita, Kishio; and Tsurumi, Shigeyuki, 4,279,649, Cl. 75-173.00A.
Yamazoe, Hiroshi: *See*—
Aoki, Masaki; Yoshida, Shigeru; Yamazoe, Hiroshi; and Nagasawa, Masahiro, 4,279,691, Cl. 156-656.000.
Yano, Hirofumi: *See*—
Makishima, Hiroshi; Toyoda, Tsunehiko; Okamura, Noriaki; Yano, Hirofumi; Mizoguchi, Akira; and Hiromori, Yasutaka, 4,279,653, Cl. 106-22.000.
Yasuda, Hiroshi: *See*—
Osakabe, Yoshio; and Yasuda, Hiroshi, 4,280,199, Cl. 365-236.000.
Yasuda, Tadahiro: *See*—
Nishikawa, Masaji; Amemiya, Norio; Yasuda, Tadahiro; and Nakayama, Shigeru, 4,279,980, Cl. 430-68.000.
Yelnosky, John: *See*—
Riley, Richard L.; Douglas, George H.; and Yelnosky, John, 4,279,928, Cl. 424-324.000.
Yohpe, William E.: *See*—
Roettele, Donald L.; and Yohpe, William E., 4,280,223, Cl. 375-93.000.
Yokogawa Electric Works, Ltd.: *See*—
Yamaguchi, Keiki; and Sano, Shinichi, 4,280,064, Cl. 307-149.000.
Yokoi, Gunpei, to Nintendo Co., Ltd. Obstacle game machine. 4,279,417, Cl. 273-1.00E.
Yokomori, Mituo; and Kawakami, Tsugimi, to Tokyo Electric Co., Ltd. Electronic timer device. 4,280,063, Cl. 307-141.400.
Yokoyama, Kenji, to Nippon Gakki Seizo Kabushiki Kaisha. Frequency response characteristic adjustable circuit. 4,280,102, Cl. 330-85.000.
Yokoyama, Tohei; Asakura, Shintaro; Urayama, Kiyoshi; and Fujii, Kenji, to Kabushiki Kaisha Hosokawa Funtai Kogaku Kenkyusho. Apparatus for measuring cohesion force of particulate materials. 4,279,165, Cl. 73-826.000.
Yoneda, Ryuichi: *See*—
Ohta, Ryozo; Yoshizawa, Tadao; Sakaguchi, Masayuki; Hara, Yoshiaki; Kyomen, Junsuke; Yoneda, Ryuichi; and Enomoto, Hidekazu, 4,279,853, Cl. 264-230.000.
Yonekawa, Yuriko: *See*—
Takami, Toru; and Yonekawa, Yuriko, 4,279,917, Cl. 424-273.00R.
Yong, Yuen-Cjen: *See*—
Henderson, Jerald M.; and Yong, Yuen-Cjen, 4,279,336, Cl. 198-443.000.
Yonkers, Edward H., to Data Packaging Corporation. High speed printer cartridge. 4,279,522, Cl. 400-196.100.
Yordanov, Nikola S.: *See*—
Novev, Todor V.; Ovcharov, Sava D.; Yordanov, Nikola S.; Acheva, Jivka P.; Yordanov, Yordan I.; and Mandova, Maria L., 4,279,708, Cl. 204-46.00R.
Yordanov, Yordan I.: *See*—
Novev, Todor V.; Ovcharov, Sava D.; Yordanov, Nikola S.; Acheva, Jivka P.; Yordanov, Yordan I.; and Mandova, Maria L., 4,279,708, Cl. 204-46.00R.
Yoshida Kogyo, K.K.: *See*—
Matsuda, Yoshio, 4,279,134, Cl. 66-195.000.
Yoshida, Shigeru: *See*—
Aoki, Masaki; Yoshida, Shigeru; Yamazoe, Hiroshi; and Nagasawa, Masahiro, 4,279,691, Cl. 156-656.000.
Yoshida, Takeshi: *See*—
Ito, Naoya; Saito, Kiichi; Yoshida, Takeshi; Aoki, Masahiro; Okubo, Masao; and Miki, Masayoshi, 4,279,648, Cl. 75-128.00C.
Yoshikawa, Ryoichi; Okajima, Kazuhiko; Nakahara, Shunichi; and Nakayama, Sumio, to Canon Kabushiki Kaisha. Camera body. 4,279,494, Cl. 354-288.000.
Yoshioka, Issei; and Kamimura, Yoichi, to Seiwa Kasei Co., Ltd. Keratin hydrolyzate useful as hair fixatives. 4,279,996, Cl. 435-69.000.
Yoshizawa, Tadao: *See*—
Ohta, Ryozo; Yoshizawa, Tadao; Sakaguchi, Masayuki; Hara, Yoshiaki; Kyomen, Junsuke; Yoneda, Ryuichi; and Enomoto, Hidekazu, 4,279,853, Cl. 264-230.000.
Yotsumoto, Toshiyuki; Ujita, Tuginobu; and Shinohara, Eisaku, to Robert Bosch GmbH. Operating lever assembly for farm tractors. 4,279,324, Cl. 180-336.000.
Young, James E.: *See*—
Gryn, Felix J.; and Young, James E., 4,279,166, Cl. 73-861.120.
Yuan, William K. C., to Entel Corporation. Message waiting system. 4,280,021, Cl. 179-84.00C.
Yueh, Yang. Method for uniformly heating a multi-level building. 4,279,381, Cl. 237-81.000.
Yusa, Hideo: *See*—
Chino, Koichi; Yusa, Hideo; Oda, Akira; Miura, Hideichi; Horiuchi, Susumu; and Takamura, Yoshiyuki, 4,279,692, Cl. 159-6.00W.
Zabotin, Viktor G.: *See*—
Buryakov, Valery M.; Kolotilov, Nikolai N.; Tokhunts, Roman D.; Yakovlev, Vladimir S.; Akulov, Vladislav A.; Zabotin, Viktor G.; Levin, Viktor Y.; Lukachev, Viktor P.; Pervyshin, Alexandr N.; Zaitsev, Konstantin A.; Karakov, Vladimir D.; and Khasanov, Mubaraksha D., 4,279,405, Cl. 266-55.000.
Zaitsev, Konstantin A.: *See*—
Buryakov, Valery M.; Kolotilov, Nikolai N.; Tokhunts, Roman D.; Yakovlev, Vladimir S.; Akulov, Vladislav A.; Zabotin, Viktor G.; Levin, Viktor Y.; Lukachev, Viktor P.; Pervyshin, Alexandr N.; Zaitsev, Konstantin A.; Karakov, Vladimir D.; and Khasanov, Mubaraksha D., 4,279,405, Cl. 266-55.000.
Zeitrag, Rolf, to Siemens Aktiengesellschaft. Method of making conference call connections in a multiplex switching system. 4,280,216, Cl. 370-62.000.
Zell, Dale R.; and Morningstar, Leroy J., to AMP Incorporated. Method of terminating flat multi-conductor transmission cable. 4,279,074, Cl. 29-866.000.
Zeltner, Erich, to Von Roll AG. Container for pasteurizing sludge. 4,279,516, Cl. 366-171.000.
Zenith Radio Corporation: *See*—
Skerlos, Peter C., 4,280,140, Cl. 358-195.100.
Zerlauth, Ferdinand, to Sulzer Brothers Limited. Sealing arrangement for a joint between two stator parts of a turbomachine. 4,279,424, Cl. 277-83.000.
Zickwolf, Herbert C., Jr., to United Technologies Corporation. Detecting power loss in free turbines. 4,280,059, Cl. 290-40.00B.
Zimmer, Erich: *See*—
Ringel, Helmut; Zimmer, Erich; and Abdelmonem, Nabil, 4,279,866, Cl. 423-7.000.
Zimmer, Robert E.: *See*—
Comerford, John; and Zimmer, Robert E., 4,280,027, Cl. 200-6.00A.
Zimmermann, Franz: *See*—
Ursprung, Karl; and Zimmermann, Franz, 4,279,505, Cl. 355-77.000.
Zodrow, Rudolf: *See*—
Buchholz, Rainer; Zodrow, Rudolf; and Rosenberg, Heinz J., 4,279,687, Cl. 156-568.000.
Zucchini, Guido, to F. Lli Zucchini. Electric lines of the armor-plated type, designed especially for electric system for interiors. 4,279,456, Cl. 339-32.00R.
Zverev, Anatoly I.; Astakhov, Evgeny A.; Klimenko, Valery S.; Skadin, Vasily G.; and Timoshin, Mikhail A. Apparatus for coating by detonation waves. 4,279,383, Cl. 239-61.000.
Zwahlen, Gunther: *See*—
Laely, Andreas; Zwahlen, Gunther; and Buxbaum, Lothar, 4,279,802, Cl. 260-40.00P.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 21ST DAY OF JULY, 1981

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Bucher, Jeffry C. Remote starting system for a combustion engine. Re. 30,686, Cl. 290-38.00R.

Bullivant, Kenneth W., to K-Tron International, Inc. Digital mass flow control system. Re. 30,684, Cl. 222-55.000.

Bush, Elmer W. Crankcase emission separator and collector. Re. 30,682, Cl. 123-573.000.

Eaton Corporation: *See*—
Streeter, Kenneth R., Re. 30,683, Cl. 192-82.00T.

Excel Corporation: *See*—
Furlette, James L.; and Stadler, Donald A., Re. 30,681, Cl. 64-30.00D.

Furlette, James L.; and Stadler, Donald A., to Excel Corporation. Torque limiting coupling. Re. 30,681, Cl. 64-30.00D.

Gilmore, John F.: *See*—
Morton, Edward W.; and Gilmore, John F., Re. 30,687, Cl. 315-58.000.

K-Tron International, Inc.: *See*—
Bullivant, Kenneth W., Re. 30,684, Cl. 222-55.000.

Kress elektrik GmbH & Co., Firma: *See*—
Kress, Willy; and Seifert, Josef, Re. 30,680, Cl. 64-4.000.

Kress, Willy; and Seifert, Josef, to Kress elektrik GmbH & Co., Firma. Connecting arrangement for a machine tool. Re. 30,680, Cl. 64-4.000.

Mendenhall, Robert L. Process for recycling asphalt-aggregate compositions. Re. 30,685, Cl. 106-280.000.

Morton, Edward W.; and Gilmore, John F., to Westinghouse Electric Corp. Energy saving device for a standard fluorescent lamp system. Re. 30,687, Cl. 315-58.000.

Seifert, Josef: *See*—
Kress, Willy; and Seifert, Josef, Re. 30,680, Cl. 64-4.000.

Stadler, Donald A.: *See*—
Furlette, James L.; and Stadler, Donald A., Re. 30,681, Cl. 64-30.00D.

Streeter, Kenneth R., to Eaton Corporation. Fluid coupling device and bimetal coil adjustment for use therein. Re. 30,683, Cl. 192-82.00T.

Westinghouse Electric Corp.: *See*—
Morton, Edward W.; and Gilmore, John F., Re. 30,687, Cl. 315-58.000.

LIST OF DESIGN PATENTEES

AB Broderna Kjellstrom: *See*—
Kjellstrom, Alvar E. P., 259,942, Cl. D21-229.000.

AB Volvo: *See*—
Sandberg, Ulf A., 259,930, Cl. D12-211.000.

Aktiebolaget Bahco Verktyg: *See*—
Wahlberg, Ulf H., 259,913, Cl. D8-58.000.

Amerock Corporation: *See*—
Pittenger, Teresa R. B., 259,914, Cl. D8-318.000.
Pittenger, Teresa R. B., 259,915, Cl. D8-320.000.
Pittenger, Teresa R. B., 259,916, Cl. D8-350.000.

AMF Incorporated: *See*—
Witte, Paul A.; and Johnson, Thomas, 259,940, Cl. D21-212.000.

Bane, John H., III. Stove draft valve control plate. 259,949, 7-21-81, Cl. D23-127.000.

Bantin, Robert A.; and Kilbourn, Dean R., to BKB Industries, Inc. Hand manipulative aquatic toy. 259,938, 7-21-81, Cl. D21-59.000.

Bell, Harold G. Splash shield for recessed soap holders. 259,905, 7-21-81, Cl. D6-86.000.

Bergen Barrel & Drum Co.: *See*—
Zilbert, Seymour, 259,969, Cl. D99-51.000.

Bergkvist, Lars A. Instrument for the indication of the angular position of an object. 259,924, 7-21-81, Cl. D10-65.000.

Berman, James S.; and Stegmaier, Sigurd, to Citibank, N.A. Desk carrel. 259,908, 7-21-81, Cl. D6-181.000.

Bianchi, John E. Gun sling. 259,945, 7-21-81, Cl. D22-7.000.

Bianchi, John E.; and Nichols, Richard D. E. Combined belt and shoulder revolver holster. 259,946, 7-21-81, Cl. D22-13.000.

Bianchi, John E.; and Nichols, Richard D. E. Combined belt and shoulder automatic handgun holster. 259,947, 7-21-81, Cl. D22-13.000.

Bianchi, John E.; and Nichols, Richard D. E. Firearm magazine carrier. 259,948, 7-21-81, Cl. D22-14.000.

BKB Industries, Inc.: *See*—
Bantin, Robert A.; and Kilbourn, Dean R., 259,938, Cl. D21-59.000.

Bogorad, Beatrice. Cosmetic mirror. 259,966, 7-21-81, Cl. D28-70.000.

Bosch-Siemens Hausgerate GmbH: *See*—
Reichl, Ernst, 259,954, Cl. D24-62.000.

Bowls, Thurman: *See*—
Wotowiec, Joseph P.; and Bowls, Thurman, 259,961, Cl. D26-26.000.

Briedert, George M. Ventilator. 259,951, 7-21-81, Cl. D23-153.000.

Burris Company: *See*—
Burris, Donald J., 259,944, Cl. D22-7.000.

Burris, Donald J., to Burris Company. Riflescope mount assembly. 259,944, 7-21-81, Cl. D22-7.000.

California Sounds, Ltd.: *See*—
Davis, C. Paul; and Sandor, Joseph, 259,911, Cl. D7-161.000.

Charlton Company, The: *See*—
Thorpe, Robert K., 259,907, Cl. D6-175.000.

Chavana, Charles G. Clock. 259,923, 7-21-81, Cl. D10-6.000.

Citibank, N.A.: *See*—
Berman, James S.; and Stegmaier, Sigurd, 259,908, Cl. D6-181.000.

Cookson, John R., to Waterbury Companies, Inc. Fruit or candy container for floral arrangements, fruit baskets or the like. 259,909, 7-21-81, Cl. D7-20.000.

Crenshaw, John C.: *See*—
Danz, Ellworth R.; and Crenshaw, John C., 259,926, Cl. D10-106.000.

Danz, Ellworth R.; and Crenshaw, John C., to General Time Corporation. Housing for alarm device. 259,926, 7-21-81, Cl. D10-106.000.

Dart Industries Inc.: *See*—
Rock, Garland H., 259,902, Cl. D6-37.000.

Davis, C. Paul; and Sandor, Joseph, to California Sounds, Ltd. Record cleaner. 259,911, 7-21-81, Cl. D7-161.000.

Edelen, Charles G. Hair curling roller. 259,964, 7-21-81, Cl. D28-37.000.

Enconserv, Inc.: *See*—
Pfaff, Ernest H.; and McIntire, William R., 259,963, Cl. D26-113.000.

Fleischmann, Gary A.; and Peabody, Lawrence C., to Kohler Co. Rolled paper holder. 259,906, 7-21-81, Cl. D6-97.000.

Foggia, Donald A.; and Pomponi, Roman F., to TIE/Communications, Inc. Direct station selection console. 259,933, 7-21-81, Cl. D14-58.000.

General Electric Company: *See*—
Wotowiec, Joseph P.; and Bowls, Thurman, 259,961, Cl. D26-26.000.

General Time Corporation: *See*—
Danz, Ellworth R.; and Crenshaw, John C., 259,926, Cl. D10-106.000.

Grote, Daniel: *See*—
Weis, Gerald J.; Munoz, Donald L.; and Grote, Daniel, 259,928, Cl. D12-98.000.

Hager, Verna G. Maternity dress. 259,895, 7-21-81, Cl. D2-131.000.

Hannon, R. Douglas: *See*—
Wentz, Eugene L.; and Hannon, R. Douglas, 259,931, Cl. D12-215.000.

Hansen, Bernard D. Game board. 259,943, 7-21-81, Cl. D21-241.000.

Hartmann, Norbert, to Pharmaton S.A. Bottle or similar article. 259,921, 7-21-81, Cl. D9-377.000.

Hawkins, Allene, administratrix: *See*—
Hawkins, James L., deceased; and Hawkins, Allene, administratrix, 259,932, Cl. D14-33.000.

Hawkins, James L., deceased; and by Hawkins, Allene, administratrix. Loudspeaker enclosure. 259,932, 7-21-81, Cl. D14-33.000.

Helferich, Howard E., to Surgical Appliance Industries, Inc. Wrist brace. 259,955, 7-21-81, Cl. D24-64.000.

Henry, John G. Trench drain. 259,950, 7-21-81, Cl. D23-42.000.

Herbert, Michael E., Sr. Child's bench. 259,901, 7-21-81, Cl. D6-7.000.

Heuel, Jeffrey P.; Palisek, William F.; and Radke, Lee, to Interstate Industries, Inc. Electronic game housing. 259,937, 7-21-81, Cl. D21-13.000.

Honeos, Alexander. Bottle. 259,920, 7-21-81, Cl. D9-349.000.

Horsting, Albertus G. Egg tray. 259,917, 7-21-81, Cl. D9-348.000.

Hufton, Austen B. Storage and display box. 259,918, 7-21-81, Cl. D9-423.000.

Hukuba, Hiroshi; and Nakamura, Nobuji, to Hukuba, Hiroshi. Hand-held lighted mirror device for inspecting the mouth or other parts of the human body. 259,952, 7-21-81, Cl. D24-13.000.

Interstate Industries, Inc.: *See*—
Heuel, Jeffrey P.; Palisek, William F.; and Radke, Lee, 259,937, Cl. D21-13.000.

Jacques. Musical instrument case. 259,900, 7-21-81, Cl. D3-30.000.
James, Donald R. Golf club head. 259,941, 7-21-81, Cl. D21-214.000.
John Watson Landscape Illumination Inc.: *See*—
Watson, John R., 259,960, Cl. D26-24.000.
Johnson, Thomas: *See*—
Witte, Paul A.; and Johnson, Thomas, 259,940, Cl. D21-212.000.
Joseph J. Muscolino, Inc.: *See*—
Ng, Joseph S.; and Sommers, William F., 259,904, Cl. D6-85.000.
Kass, Ely: *See*—
Weissman, Jerry; and Kass, Ely, 259,953, Cl. D24-38.000.
Kilbourn, Dean R.: *See*—
Bantin, Robert A.; and Kilbourn, Dean R., 259,938, Cl. D21-59.000.
Kjellstrom, Alvar E. P., to AB Broderna Kjellstrom. Toe fitting for a ski bindings. 259,942, 7-21-81, Cl. D21-229.000.
Kohler Co.: *See*—
Fleischmann, Gary A.; and Peabody, Lawrence C., 259,906, Cl. D6-97.000.
Lovret, John E. Priming valve for internal combustion engines. 259,934, 7-21-81, Cl. D15-5.000.
Lovret, John E. Priming valve unit for internal combustion engines. 259,935, 7-21-81, Cl. D15-5.000.
McIntire, William R.: *See*—
Pfaff, Ernest H.; and McIntire, William R., 259,963, Cl. D26-113.000.
McNeall, Peter I. House. 259,957, 7-21-81, Cl. D25-19.000.
Munoz, Donald L.: *See*—
Weis, Gerald J.; Munoz, Donald L.; and Grote, Daniel, 259,928, Cl. D12-98.000.
Nakamura, Nobuji: *See*—
Hukuba, Hiroshi; and Nakamura, Nobuji, 259,952, Cl. D24-13.000.
Ng, Joseph S.; and Sommers, William F., to Joseph J. Muscolino, Inc. Portable work table. 259,904, 7-21-81, Cl. D6-85.000.
Nichols, Richard D. E.: *See*—
Bianchi, John E.; and Nichols, Richard D. E., 259,946, Cl. D22-13.000.
Bianchi, John E.; and Nichols, Richard D. E., 259,947, Cl. D22-13.000.
Bianchi, John E.; and Nichols, Richard D. E., 259,948, Cl. D22-14.000.
Norlund, Stefan. Tender comprising four separate hull parts. 259,927, 7-21-81, Cl. D12-62.000.
Oord, Klaas T., to U.S. Philips Corporation. Shaving unit. 259,965, 7-21-81, Cl. D28-50.000.
Palisek, William F.: *See*—
Heuel, Jeffrey P.; Palisek, William F.; and Radke, Lee, 259,937, Cl. D21-13.000.
Palmer, John A. Height measuring scale. 259,925, 7-21-81, Cl. D10-71.000.
Paramount Pictures Corporation: *See*—
Rubin, Richard M., 259,939, Cl. D21-147.000.
Peabody, Lawrence C.: *See*—
Fleischmann, Gary A.; and Peabody, Lawrence C., 259,906, Cl. D6-97.000.
Pease Company: *See*—
Shaffer, B. Jeremiah, 259,959, Cl. D25-72.000.
Shaffer, Jeremiah, 259,958, Cl. D25-72.000.
Pentel Kabushiki Kaisha: *See*—
Seki, Kanta, 259,922, Cl. D9-418.000.
Pfaff, Ernest H.; and McIntire, William R., to Enconserv, Inc. Lamp assembly for electrical conversion of a gas street lamp. 259,963, 7-21-81, Cl. D26-113.000.
Pharmaton S.A.: *See*—
Hartmann, Norbert, 259,921, Cl. D9-377.000.
Pittenger, Teresa R. B., to Amerock Corporation. Pull. 259,914, 7-21-81, Cl. D8-318.000.
Pittenger, Teresa R. B., to Amerock Corporation. Entry handle. 259,915, 7-21-81, Cl. D8-320.000.
Pittenger, Teresa R. B., to Amerock Corporation. Escutcheon. 259,916, 7-21-81, Cl. D8-350.000.
Pomponi, Roman F.: *See*—
Foggia, Donald A.; and Pomponi, Roman F., 259,933, Cl. D14-58.000.
Price, Kenneth E.; and Sasaki, Isao, to Price, Kenneth E. Swimming pool vacuum head. 259,936, 7-21-81, Cl. D15-63.000.
Radke, Lee: *See*—
Heuel, Jeffrey P.; Palisek, William F.; and Radke, Lee, 259,937, Cl. D21-13.000.
Raintree Buckle & Jewelry, Inc.: *See*—
Van Brouwer, Ryk, 259,896, Cl. D2-440.000.
Van Brouwer, Ryk, 259,897, Cl. D2-440.000.
Van Brouwer, Ryk, 259,898, Cl. D2-440.000.
Van Brouwer, Ryk, 259,899, Cl. D2-440.000.
Ramsey, Travis F. Feed bucket holder. 259,967, 7-21-81, Cl. D30-13.000.
Reichl, Ernst, to Bosch-Siemens Hausgerate GmbH. Combined pocket ultrasonic atomizer and battery charger therefor. 259,954, 7-21-81, Cl. D24-62.000.
Rock, Garland H., to Dart Industries Inc. Bead-filled chair. 259,902, 7-21-81, Cl. D6-37.000.
Rubin, Richard M., to Paramount Pictures Corporation. Toy weapon. 259,939, 7-21-81, Cl. D21-147.000.
Sandberg, Ulf A., to AB Volvo. Wheel. 259,930, 7-21-81, Cl. D12-211.000.
Sandor, Joseph: *See*—
Davis, C. Paul; and Sandor, Joseph, 259,911, Cl. D7-161.000.
Sasaki, Isao: *See*—
Price, Kenneth E.; and Sasaki, Isao, 259,936, Cl. D15-63.000.
Sassmannshausen, Knut O. Flashlight head. 259,962, 7-21-81, Cl. D26-37.000.
Schneider, Alfons. Pick-up device for animal excrement. 259,968, 7-21-81, Cl. D30-99.000.
Seki, Kanta, to Pentel Kabushiki Kaisha. Container for an art color tube or the like. 259,922, 7-21-81, Cl. D9-418.000.
Shaara, Joseph, Sr. Combined shoreline protective structure and water purification structure. 259,956, 7-21-81, Cl. D25-1.000.
Shaffer, B. Jeremiah, to Pease Company. Decorative composite glass panel for installation in a door or window. 259,959, 7-21-81, Cl. D25-72.000.
Shaffer, Jeremiah, to Pease Company. Decorative composite glass panel for installation in a door or window. 259,958, 7-21-81, Cl. D25-72.000.
Sidewater, Rosalyn G. Stool. 259,903, 7-21-81, Cl. D6-74.000.
Simmons, Lucine C. Macrame coaster or the like. 259,910, 7-21-81, Cl. D7-45.000.
Sommers, William F.: *See*—
Ng, Joseph S.; and Sommers, William F., 259,904, Cl. D6-85.000.
Stegmaier, Sigurd: *See*—
Berman, James S.; and Stegmaier, Sigurd, 259,908, Cl. D6-181.000.
Surgical Appliance Industries, Inc.: *See*—
Helferich, Howard E., 259,955, Cl. D24-64.000.
Sztuden, Luis. Bottle. 259,919, 7-21-81, Cl. D9-311.000.
Thermoplastics Incorporated: *See*—
Weis, Gerald J.; Munoz, Donald L.; and Grote, Daniel, 259,928, Cl. D12-98.000.
Thorpe, Robert K., to Charlton Company, The. Etagere. 259,907, 7-21-81, Cl. D6-175.000.
TIE/Communications, Inc.: *See*—
Foggia, Donald A.; and Pomponi, Roman F., 259,933, Cl. D14-58.000.
Tontarelli, Sergio. Clothes-peg. 259,912, 7-21-81, Cl. D7-198.000.
U.S. Philips Corporation: *See*—
Oord, Klaas T., 259,965, Cl. D28-50.000.
Van Brouwer, Ryk, to Raintree Buckle & Jewelry, Inc. Belt buckle. 259,896, 7-21-81, Cl. D2-440.000.
Van Brouwer, Ryk, to Raintree Buckle & Jewelry, Inc. Belt buckle. 259,897, 7-21-81, Cl. D2-440.000.
Van Brouwer, Ryk, to Raintree Buckle & Jewelry, Inc. Belt buckle. 259,898, 7-21-81, Cl. D2-440.000.
Van Brouwer, Ryk, to Raintree Buckle & Jewelry, Inc. Belt buckle. 259,899, 7-21-81, Cl. D2-440.000.
Wahlberg, Ulf H., to Aktiebolaget Bahco Verktyg. Flat nose pliers. 259,913, 7-21-81, Cl. D8-58.000.
Waterbury Companies, Inc.: *See*—
Cookson, John R., 259,909, Cl. D7-20.000.
Watson, John R., to John Watson Landscape Illumination Inc. Landscape illumination light or similar apparatus. 259,960, 7-21-81, Cl. D26-24.000.
Weis, Gerald J.; Munoz, Donald L.; and Grote, Daniel, to Thermoplastics Incorporated. Pickup truck bed and tailgate liner. 259,928, 7-21-81, Cl. D12-98.000.
Weissman, Jerry; and Kass, Ely. Animal hydrotherapy tank. 259,953, 7-21-81, Cl. D24-38.000.
Weldon, Joseph L. Tire tread. 259,929, 7-21-81, Cl. D12-140.000.
Wentz, Eugene L.; and Hannon, R. Douglas. Boat anchor. 259,931, 7-21-81, Cl. D12-215.000.
Witte, Paul A.; and Johnson, Thomas, to AMF Incorporated. Racquetball racket. 259,940, 7-21-81, Cl. D21-212.000.
Wotowiec, Joseph P.; and Bowls, Thurman, to General Electric Company. Fluorescent lamp unit. 259,961, 7-21-81, Cl. D26-26.000.
Zilbert, Seymour, to Bergen Barrel & Drum Co. Drum. 259,969, 7-21-81, Cl. D99-51.000.

LIST OF PLANT PATENTEES

Pan-American Plant Company: *See*—
Shoesmith, Leonard H., 4,752, Cl. 76.000.
Shoesmith, Leonard H., 4,753, Cl. 78.000.
Shoesmith, Leonard H., to Pan-American Plant Company. Chrysanthemum named Cougar. 4,752, 7-21-81, Cl. 76.000.
Shoesmith, Leonard H., to Pan-American Plant Company. Chrysanthemum named huskey. 4,753, 7-21-81, Cl. 78.000.

CLASSIFICATION OF PATENTS

ISSUED JULY 21, 1981

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2

421 4,279,037
425 4,279,038
428 4,279,039
4,279,040

CLASS 3

1.912 4,279,041
1.913 4,279,042

CLASS 5

81 R 4,279,043
453 4,279,044
497 4,279,045
503 4,279,046

CLASS 8

115.5 4,279,612
407 4,279,613
533 4,279,614
582 4,279,615

CLASS 9

8 P 4,279,047
310 AA 4,279,048

CLASS 12

142 S 4,279,049

CLASS 14

71.3 4,279,050

CLASS 15

29 4,279,051
93 A 4,279,052
159 A 4,279,053
250.42 4,279,054
302 4,279,055
373 4,279,056
415 R 4,279,057

CLASS 17

46 4,279,058
51 4,279,059

CLASS 19

106 R 4,279,060

CLASS 23

230 B 4,279,616
4,279,617
232 R 4,279,618

CLASS 24

72.5 4,279,061
138 4,279,063
248 R 4,279,064
305 4,279,062

CLASS 29

33 K 4,279,065
157.3 C 4,279,066
239 4,279,067
252 4,279,068
571 4,279,069
583 4,279,070
717 4,279,071
764 4,279,072
832 4,279,073
866 4,279,074
872 4,279,075

CLASS 30

254 4,279,076
442 4,279,077

CLASS 33

126.5 4,279,078
149 J 4,279,079
174 L 4,279,080
479 4,279,081

CLASS 34

82 4,279,082

CLASS 36

101 4,279,083

CLASS 37

42 R 4,279,084
103 4,279,085

CLASS 40

152.1 4,279,086
158 R 4,279,087
442 4,279,088
547 4,279,089
617 4,279,090

CLASS 42

1 V 4,279,091

CLASS 43

44.91 4,279,092
81.5 4,279,093
96 4,279,094
139 4,279,095

CLASS 44

56 4,279,619
4,279,620
72 4,279,621

CLASS 46

11 4,279,096
74 D 4,279,097
101 4,279,098
119 4,279,099
179 4,279,100

CLASS 47

64 4,279,101

CLASS 48

197 R 4,279,622

CLASS 51

283 R 4,279,623
322 4,279,102
389 4,279,103

CLASS 52

38 4,279,104
71 4,279,105
100 4,279,106
169.13 4,279,107
233 4,279,108
263 4,279,109
302 4,279,110
714 4,279,111
741 4,279,112

CLASS 53

219 4,279,113
314 4,279,114
4,279,115
466 4,279,116

CLASS 55

1 4,279,624
131 4,279,625
204 4,279,626
238 4,279,627
4,279,628
307 4,279,629
316 4,279,630

CLASS 56

11.3 4,279,117
329 4,279,118

CLASS 57

124 4,279,119
204 4,279,120
258 4,279,121

CLASS 59

10 4,279,122

CLASS 60

226 R 4,279,123
505 4,279,124
641.5 4,279,125
651 4,279,126

CLASS 62

29 4,279,631
77 4,279,127
238.6 4,279,128
278 4,279,129
544 4,279,130

CLASS 64

4 Re.30,680
21 4,279,131
27 C 4,279,132
30 D Re.30,681

CLASS 65

21.4 4,279,632
41 4,279,633
182.3 4,279,634

CLASS 66

84 R 4,279,133
195 4,279,134

CLASS 68

15 4,279,135

CLASS 70

71 4,279,136
416 4,279,137

CLASS 71

4 Z 4,279,635
90 4,279,636
92 4,279,637
4,279,638
94 4,279,639

CLASS 72

234 4,279,139
237 4,279,140
482 4,279,141

CLASS 73

1 G 4,279,142
35 4,279,143
38 4,279,144
115 4,279,145
118 4,279,146
189 4,279,147
215 4,279,148
290 R 4,279,149
338 4,279,150
343 R 4,279,151
356 4,279,152
357 4,279,153
359 R 4,279,154
368.6 4,279,155
618 4,279,157
637 4,279,158
651 4,279,159
708 4,279,160
743 4,279,161
746 4,279,162
761 4,279,163
826 4,279,164
4,279,165
861.12 4,279,166
861.25 4,279,167
861.35 4,279,168
863.22 4,279,156

CLASS 74

3.54 4,279,169
10.33 4,279,170
128 4,279,171
441 4,279,173
473 P 4,279,174
473 R 4,279,175
493 4,279,176
675 4,279,177
745 4,279,178
850 4,279,179

CLASS 75

0.5 B 4,279,641
1 R 4,279,640
10 C 4,279,642
58 4,279,643
118 P 4,279,644
122 4,279,645
123 AA 4,279,646
124 4,279,647
128 C 4,279,648
173 A 4,279,649
175.5 4,279,650
233 4,279,651

CLASS 82

1 C 4,279,180
21 A 4,279,181
28 R 4,279,182

CLASS 83

16 4,279,183
302 4,279,184

CLASS 84

1.01 4,279,185
4,279,186
1.03 4,279,187
1.14 4,279,188
421 4,279,189

CLASS 89

185 4,279,191

CLASS 91

361 4,279,192
376 R 4,279,193
483 4,279,194

CLASS 92

88 4,279,195

CLASS 98

115 SB 4,279,196

CLASS 100

117 4,279,197
229 A 4,279,198

CLASS 101

93.05 4,279,199
170 4,279,200

CLASS 104

100 4,279,201

CLASS 105

206 R 4,279,202
321 4,279,203

CLASS 106

18.21 4,279,652
22 4,279,653
39.6 4,279,654
57 4,279,655
73.5 4,279,656
4,279,657
213 4,279,658
230 4,279,659
280 Re.30,685
281 R 4,279,660
288 B 4,279,661
289 4,279,662

CLASS 108

53.3 4,279,204

CLASS 110

245 4,279,205
263 4,279,206
345 4,279,207
346 4,279,208

CLASS 112

104 4,279,209
181 4,279,210

CLASS 113

55 4,279,211

CLASS 114

222 4,279,212

CLASS 116

200 4,279,213
208 4,279,214

CLASS 118

326 4,279,215
723 4,279,216

CLASS 119

1 4,279,217
2 4,279,218
51 R 4,279,219
51.11 4,279,220
4,279,221

CLASS 122

4 D 4,279,222

CLASS 123

25 N 4,279,223
52 MV 4,279,224
80 BB 4,279,225
90.55 4,279,226
179 H 4,279,227
352 4,279,228
359 4,279,229
440 4,279,230
489 4,279,231
516 4,279,232
519 4,279,233
549 4,279,234
569 4,279,235
573 Re.30,682
4,279,236

CLASS 126

77 4,279,237
4,279,238
120 4,279,239
419 4,279,240
431 4,279,241
443 4,279,242
450 4,279,243
4,279,244

CLASS 127

1 4,279,663

CLASS 128

6 4,279,246
4,279,247
92 D 4,279,249
92 EA 4,279,248
004 4,279,245
200.14 4,279,250
348 4,279,251
349 R 4,279,252
355 4,279,253
395 4,279,254
402 4,279,255
419 R 4,279,256
722 4,279,257
731 4,279,258
774 4,279,259
4,279,260

CLASS 130

5 B 4,279,261

CLASS 132

7 4,279,262

CLASS 134

38 4,279,664
4,279,665
111 4,279,263

CLASS 135

5.1 4,279,264
48 4,279,265

CLASS 137

68 R 4,279,266
100 4,279,267
115 4,279,268
206 4,279,269
340 4,279,270
493.8 4,279,271
596.18 4,279,272
627.5 4,279,273

CLASS 138

42 4,279,274
109 4,279,275

CLASS 139

159 4,279,276

CLASS 140

92.2 4,279,277
147 4,279,278

CLASS 141

5 4,279,279

CLASS 144

1 F 4,279,280
2 Z 4,279,281

CLASS 147

9 4,279,282

CLASS 148

6.3 4,279,666
32 4,279,667
101 4,279,668
175 4,279,669
4,279,670
188 4,279,671

CLASS 149

19.8 4,279,672

CLASS 152

209 R 4,279,283
330 R 4,279,284
4,279,285
353 R 4,279,286
375 4,279,287

CLASS 156

39 4,279,673
62 4,279,674
73.1 4,279,675
159 4,279,676
160 4,279,677
169 4,279,678
196 4,279,679
212 4,279,680
245 4,279,681
367 4,279,682
397 4,279,683
425 4,279,684
509 4,279,685
517 4,279,686
568 4,279,687
613 4,279,688
614 4,279,689
649 4,279,690
656 4,279,691

CLASS 159

6 W 4,279,692
47 WL 4,279,693

CLASS 160

374 4,279,288

CLASS 162

28 4,279,694
146 4,279,695
4,279,696

CLASS 164

97 4,279,289
154 4,279,290

CLASS 165

1 4,279,291
45 4,279,294
61 4,279,292
82 4,279,293
94 4,279,295
134 R 4,279,296
165 4,279,297
181 4,279,298

CLASS 166

60 4,279,299
90 4,279,300
250 4,279,301
251 4,279,302
284 4,279,303
301 4,279,304
307 4,279,305
312 4,279,306
314 4,279,307
315 4,279,308

CLASS 169

37 4,279,309

CLASS 172

4 4,279,138
47 4,279,310
509 4,279,311
789 4,279,312

CLASS 173

112 4,279,313
163 4,279,314

CLASS 174

5 R 4,280,013
14 R 4,280,014
28 4,280,015
102 R 4,280,016
182 4,280,017

CLASS 175

249 4,279,315
371 4,279,316

CLASS 176

22 4,279,697
4,279,698
30 4,279,699
68 4,279,700
87 4,279,701

CLASS 177

185 4,279,317

CLASS 179

1 M 4,280,018
1.5 M 4,280,019
2 EA 4,280,020
84 C 4,280,021
99 A 4,280,022
189 D 4,280,025

CLASS 180

9.64 4,279,318
12 4,279,319
69 R 4,279,320
89.14 4,279,321
128 4,279,322
148 4,279,323
336 4,279,324

CLASS 181

211 4,279,325
228 4,279,326

CLASS 182

206 4,279,327

CLASS 187

9 R 4,279,328
25 4,279,329

CLASS 188

71.7 4,279,330
73.3 4,279,331
170 4,279,332
218 XL 4,279,333

CLASS 192

3.57 4,279,334
82 T Re.30,683
134 4,279,335

CLASS 198

443 4,279,336
472 4,279,337
525 4,279,338

CLASS 200

6 A 4,280,027
44 4,280,028
50 R 4,280,029
157 4,280,026
237 4,280,030
314 4,280,031

CLASS 202

137 4,279,702
158 4,279,703
175 4,279,704

CLASS 204

1.5 4,279,705
26 4,279,706
43 T 4,279,707
46 R 4,279,708
98 4,279,709
101 4,279,710
105 R 4,279,711
128 4,279,712
129 4,279,713
129.9 4,279,714
4,279,715
149 4,279,716
159.13 4,279,717
159.15 4,279,718
159.23 4,279,719
4,279,720
159.24 4,279,721
162 R 4,279,722
164 4,279,723
180 G 4,279,724
181 F 4,279,725
192 P 4,279,726
195 R 4,279,727
4,279,728
196 4,279,729
206 4,279,730
254 4,279,731
269 4,279,732

CLASS 206

3 4,279,339
219 4,279,340
345 4,279,341
542 4,279,342
582 4,279,343
631 4,279,344

CLASS 208

48 Q 4,279,734
48 R 4,279,733
113 4,279,735
215 4,279,736
217 4,279,737
253 4,279,738
309 4,279,739

CLASS 209

3.2 4,279,345
12 4,279,740
44 4,279,741
166 4,279,742
211 4,279,743
214 4,279,744
215 4,279,745
582 4,279,346

CLASS 210

130 4,279,746
197 4,279,747
222 4,279,748
330 4,279,749
357 4,279,750
388 4,279,751
500.2 4,279,752
605 4,279,753
608 4,279,754
661 4,279,755
667 4,279,756
671 4,279,757
700 4,279,758
709 4,279,759
784 4,279,760

CLASS 212

147 4,279,347
196 4,279,348

CLASS 215

6 4,279,349
228 4,279,350
231 4,279,351
247 4,279,352
254 4,279,353

CLASS 219

10.55 A 4,280,033
10.55 E 4,280,032
10.77 4,280,038
78.11 4,280,039
104 4,280,040
121 PT 4,280,041
4,280,042
137.31 4,280,043
462 4,280,044
540 4,280,045
544 4,280,046

CLASS 220

23.83 4,279,354
300 4,279,355
314 4,279,356
318 4,279,357
321 4,279,358

CLASS 221

70 4,279,359

CLASS 222

1 4,279,360
4,279,361
55 Re.30,684
94 4,279,362
4,279,363
162 4,279,364

CLASS 224

42.42 4,279,365
257 4,279,367
326 4,279,368

CLASS 225

3 4,279,369
67 4,279,370

CLASS 226

91 4,279,371
118 4,279,372

CLASS 229

11 4,279,373
34 R 4,279,374
37 R 4,279,375
38 4,279,376
39 R 4,279,377
4,279,378
4,279,379

CLASS 232

35 4,279,380

CLASS 235

1 D 4,280,034
94 R 4,280,035
379 4,280,036
454 4,280,037

CLASS 237

81 4,279,381

CLASS 239

11 4,279,382
61 4,279,383
67 4,279,384
90 4,279,385

CLASS 242

68.3 4,279,386
84.2 G 4,279,387
152.1 4,279,388
156.1 4,279,389
192 4,279,390

CLASS 244

17.13 4,279,391
150 4,279,392
152 4,279,393
153 R 4,279,394

CLASS 246

182 R 4,279,395

CLASS 248

206 R 4,279,396
221.3 4,279,397
405 4,279,398

CLASS 249

2 4,279,399
106 4,279,400
139 4,279,401

CLASS 250

201 4,279,472
252 4,280,047
264 4,280,048
310 4,280,049
330 4,280,050
363 S 4,280,051
381 4,280,052
432 PD 4,280,053
440 4,280,054
484 4,280,055
515 4,280,056
551 4,280,057
554 4,280,058

CLASS 251

63 4,279,402
148 4,279,403
167 4,279,404

CLASS 252

46.4 4,279,761
47.5 4,279,762
62.58 4,279,763
99 4,279,764
117 4,279,765
174.25 4,279,766
178 4,279,767
180 4,279,768
186 4,279,769
299.62 4,279,770
299.63 4,279,771
301.4 F 4,279,772
408 4,279,773
4,279,774
4,279,775
429 B 4,279,776
439 4,279,777
4,279,778
448 4,279,779
452 4,279,780
463 4,279,781
465 4,279,782
511 4,279,783
513 4,279,784
518 4,279,785
536 4,279,786

CLASS 260

8 4,279,787
9 4,279,788
17 R 4,279,789
17.4 GC 4,279,791
17.4 R 4,279,790
18 R 4,279,793
18 S 4,279,792
29.2 EP 4,279,794
29.6 R 4,279,796
29.6 RW 4,279,795
33.4 R 4,279,797
4,279,798
37 N 4,279,799
39 P 4,279,800
40 P 4,279,802
4,279,803
40 R 4,279,801
45.75 B 4,279,806
4,279,807
4,279,808
45.8 N 4,279,804
45.9 NC 4,279,805
45.95 C 4,279,809
112.5 R 4,279,810
123.5 4,279,811
123.7 4,279,812
163 4,279,813
173 4,279,814
205 4,279,815
244.4 4,279,816
4,279,817
326.27 4,279,821
326.47 4,279,822
326.5 FM 4,279,820
326.5 S 4,279,819
343.21 4,279,823
345.3 4,279,824
371 4,279,825
397.2 4,279,826
397.25 4,279,827
4,279,828
429.9 4,279,829
453 P 4,279,832
453 RZ 4,279,831
464 4,279,833
4,279,834
465 D 4,279,835
500.5 H 4,279,836
505 N 4,279,837
968 4,279,838
4,279,839
4,279,840

CLASS 261

23 A 4,279,841
124 4,279,842

CLASS 264

11 4,279,843
30 4,279,844
4,279,845
41 4,279,846
51 4,279,847
53 4,279,848
63 4,279,849
135 4,279,850
174 4,279,851
227 4,279,852
230 4,279,853
275 4,279,854
298 4,279,855
313 4,279,856
541 4,279,857

CLASS 266

55 4,279,405
81 4,279,406
193 4,279,407
271 4,279,408

CLASS 270

5 4,279,409
6 4,279,410
39 4,279,411

CLASS 271

108 4,279,412
274 4,279,413

CLASS 272

3 4,279,414
70 4,279,415
124 4,279,416

CLASS 273

1 E 4,279,417
73 D 4,279,418
87.4 4,279,419
187 A 4,279,420
237 4,279,421
256 4,279,422

CLASS 277

83 4,279,424
207 A 4,279,425
237 R 4,279,426

CLASS 280

16 4,279,427
95 R 4,279,428
267 4,279,429
439 4,279,430
508 4,279,431
605 4,279,432
4,279,433
4,279,434

CLASS 285

242 4,279,435

CLASS 290

38 R Re.30,686
40 B 4,280,059
40 R 4,280,060
55 4,280,061

CLASS 292

346 4,279,436

CLASS 294

1 BB 4,279,437
88 4,279,438
162 4,279,366

CLASS 296

39 R 4,279,439
164 4,279,440
218 4,279,441

CLASS 297

367 4,279,442

CLASS 299

1 4,279,443
2 4,279,444
34 4,279,445

CLASS 301

20 4,279,446

CLASS 303

6 C 4,279,447
4,279,448

CLASS 305

35 EB 4,279,449

CLASS 307

10 LS 4,280,062
141.4 4,280,063
149 4,280,064
221 D 4,280,066
4,280,067
4,280,068
279 4,280,070
473 4,280,065
571 4,280,069

CLASS 308

8.2 4,279,450
26 4,279,451
36.1 4,279,452

CLASS 310

52 4,280,071
67 R 4,280,072
77 4,280,073
306 4,280,074

CLASS 312

282 4,279,453
297 4,279,454
330 R 4,279,455

CLASS 313

93 4,280,075
114 4,280,076
402 4,280,077

CLASS 315

39.51 4,280,078
58 Re.30,687
169.4 4,280,079
368 4,280,080

CLASS 318

6 4,280,081
341 4,280,082
565 4,280,083
696 4,280,084
803 4,280,085

CLASS 320

1 4,280,086

CLASS 322

28 4,280,087

CLASS 323

304 4,280,088
315 4,280,090
4,280,091
354 4,280,089

CLASS 324

51 4,280,092
117 R 4,280,093
202 4,280,094
248 4,280,095
316 4,280,096
434 4,280,097

CLASS 328

59 4,280,098
63 4,280,099

CLASS 329

103 4,280,100
167 4,280,101

CLASS 330

85 4,280,102
290 4,280,103

CLASS 331

1 A 4,280,104
94.5 H 4,280,106
4,280,107
4,280,108
94.5 N 4,280,109
94.5 P 4,280,105
107 DP 4,280,110

CLASS 333

1.1 4,280,111
21 R 4,280,112
202 4,280,113

CLASS 338

2 4,280,114
35 4,280,115

CLASS 339

32 R 4,279,456
36 4,279,457
45 M 4,279,458
75 MP 4,279,459
97 P 4,279,460
246 4,279,461

CLASS 340

66 4,280,116
81 R 4,280,117
147 MD 4,280,118
4,280,119
303 4,280,120
365 VL 4,280,121
380 4,280,122
384 E 4,280,123
621 4,280,126
650 4,280,124
795 4,280,125

CLASS 343

5 CM 4,280,127
100 LE 4,280,128
715 4,280,129

CLASS 346

75 4,280,130

CLASS 350

3.6 4,279,462
17 4,279,463
96.19 4,279,464
96.20 4,279,465
96.21 4,279,466
4,279,467
4,279,468
96.22 4,279,469
96.23 4,279,470
103 4,279,471
307 4,279,473
331 R 4,279,474
363 4,279,475
414 4,279,476
4,279,477

CLASS 351

13 4,279,478
37 4,279,479
159 4,279,480

CLASS 352

171 4,279,481

CLASS 353

65 4,279,482

CLASS 354

5 4,279,483
25 4,279,484
51 4,279,485
62 4,279,486
79 4,279,487
145 4,279,488
155 4,279,489
173 4,279,490
187 4,279,492
197 4,279,493
288 4,279,494
321 4,279,495

CLASS 355

3 BE 4,279,496
8 4,279,497
14 D 4,279,498
15 4,279,499
4,279,500
4,279,501
27 4,279,491
38 4,279,502
45 4,279,503
72 4,279,504
77 4,279,505

CLASS 356

39 4,279,506
225 4,279,507
237 4,279,508
246 4,279,509
319 4,279,510
328 4,279,511
335 4,279,512
387 4,279,513
445 4,279,514

CLASS 357

17 4,280,131
70 4,280,132

CLASS 358

8 4,280,133
67 4,280,134
93 4,280,135
4,280,136
101 4,280,137
150 4,280,138
165 4,280,139
195.1 4,280,140
213 4,280,141

214 4,280,142
260 4,280,143
280 4,280,144
289 4,280,145

CLASS 360

10 4,280,146
4,280,147
13 4,280,148
14 4,280,149
4,280,150
33 4,280,151
61 4,280,152
66 4,280,153
96.4 4,280,154
98 4,280,155
105 4,280,156
106 4,280,157
113 4,280,158
137 4,280,159

CLASS 361

3 4,280,160
18 4,280,161
45 4,280,162
172 4,280,163
179 4,280,164
236 4,280,165
253 4,280,166

CLASS 362

33 4,280,167
35 4,280,168
217 4,280,169
224 4,280,170
240 4,280,171
269 4,280,172
294 4,280,173

CLASS 363

24 4,280,174
127 4,280,175

CLASS 364

200 4,280,176
4,280,177
414 4,280,178
464 4,280,179
4,280,180
4,280,181
475 4,280,182
497 4,280,183
506 4,280,184
4,280,185
518 4,280,186
552 4,280,187
566 4,280,188
734 4,280,189
770 4,280,190
807 4,280,191
900 4,280,192
4,280,193

CLASS 365

7 4,280,194
39 4,280,195
45 4,280,196
154 4,280,197
203 4,280,198
236 4,280,199

CLASS 366

76 4,279,515
171 4,279,516
177 4,279,517

CLASS 367

37 4,280,200
56 4,280,201
87 4,280,202
103 4,280,203
116 4,280,204
119 4,280,205
179 4,280,206

CLASS 368

21 4,280,207
66 4,280,208
71 4,280,209
73 4,280,210
76 4,280,211
82 4,280,212
187 4,280,213
282 4,280,214

CLASS 369

43 4,280,023
45 4,280,215
219 4,280,024
247 4,279,423

CLASS 370

62 4,280,216
63 4,280,217

CLASS 371

6 4,280,218
27 4,280,220

CLASS 375

4 4,280,219
17 4,280,221
38 4,280,222
93 4,280,223
116 4,280,224

CLASS 400

124 4,279,518
4,279,519
4,279,520
4,279,521
196.1 4,279,522
279 4,279,523
564.1 4,279,524
656 4,279,525

CLASS 401

97 4,279,526
277 4,279,527

CLASS 403

57 4,279,528
246 4,279,529
267 4,279,531
337 4,279,530

CLASS 404

68 4,279,532
4,279,533
72 4,279,534

CLASS 405

15 4,279,535
31 4,279,536
61 4,279,537
66 4,279,538
76 4,279,539
115 4,279,540
119 4,279,541
169 4,279,542
195 4,279,543
202 4,279,544
211 4,279,545
225 4,279,546
258 4,279,547
283 4,279,548

CLASS 406

14 4,279,549

CLASS 408

59 4,279,550
67 4,279,551
112 4,279,552
135 4,279,553

CLASS 409

180 4,279,554

CLASS 411

487 4,279,190

CLASS 414

83 4,279,555
218 4,279,556
400 4,279,557
412 4,279,558
431 4,279,559
589 4,279,560
591 4,279,561
598 4,279,562
611 4,279,563
621 4,279,564
667 4,279,604
678 4,279,565
686 4,279,566
785 4,279,567

CLASS 415

17 4,279,568
52 4,279,569
53 T 4,279,570
89 4,279,571

CLASS 416

220 R 4,279,572
244 A 4,279,575

CLASS 417

53 4,279,573
243 4,279,574
407 4,279,576

CLASS 418

35 4,279,577
97 4,279,578

CLASS 422

25 4,279,858
61 4,279,859
63 4,279,860
67 4,279,861
72 4,279,862
102 4,279,863
179 4,279,864
187 4,279,865

CLASS 423

7 4,279,866
26 4,279,867
29 4,279,868
54 4,279,869
4,279,870
74 4,279,871
228 4,279,872
242 4,279,873
246 4,279,874
249 4,279,875
305 4,279,876
321 R 4,279,877
4,279,878
335 4,279,879
445 4,279,880
456 4,279,881
574 R 4,279,882
584 4,279,883

CLASS 424

1 4,279,884
4,279,885
4,279,886
1.5 4,279,887
49 4,279,888
57 4,279,889
69 4,279,890
73 4,279,891
85 4,279,892
89 4,279,893
122 4,279,894
127 4,279,895
180 4,279,896
211 4,279,897
217 4,279,898
229 4,279,899
241 4,279,900
4,279,901
246 4,279,818
4,279,902
4,279,903
4,279,904
4,279,905
247 4,279,906
248.51 4,279,907
248.55 4,279,908
250 4,279,909
251 4,279,910
4,279,911
258 4,279,912
4,279,913
4,279,914
262 4,279,915
4,279,916
273 R 4,279,917
274 4,279,918
279 4,279,919
282 4,279,920
285 4,279,921
4,279,922
304 4,279,923
4,279,924
311 4,279,925
316 4,279,926
322 4,279,927
324 4,279,928
4,279,929
331 4,279,930

CLASS 425

6 4,279,579
72 R 4,279,580
78 4,279,581
159 4,279,582
253 4,279,583
307 4,279,584
403 4,279,585
438 4,279,586
531 4,279,587
568 4,279,588

CLASS 426

48 4,279,931
89 4,279,932
124 4,279,933
262 4,279,934
264 4,279,935
265 4,279,936
424 4,279,937
4,279,938
583 4,279,939
590 4,279,940
602 4,279,941

CLASS 427

14.1 4,279,942
57 4,279,943
62 4,279,944
130 4,279,945
133 4,279,946
255.2 4,279,947
305 4,279,948
356 4,279,949
393.6 4,279,950
437 4,279,951

CLASS 428

36 4,279,952
90 4,279,953
158 4,279,954
174 4,279,955
192 4,279,956
212 4,279,957
215 4,279,958
288 4,279,959
290 4,279,960
328 4,279,961
332 4,279,962
433 4,279,963
496 4,279,964
582 4,279,965
595 4,279,966
647 4,279,967
677 4,279,968
698 4,279,969

CLASS 429

35 4,279,970
46 4,279,971
50 4,279,972
101 4,279,973
104 4,279,974
181 4,279,975
197 4,279,976
245 4,279,977
248 4,279,978
254 4,279,979

CLASS 430

68 4,279,980
73 4,279,981
170 4,279,982
228 4,279,983
270 4,279,984
280 4,279,985
4,279,986
409 4,279,987
499 4,279,988
531 4,279,989
551 4,279,990

CLASS 431

328 4,279,589
344 4,279,591
360 4,279,590

CLASS 432

105 4,279,592

CLASS 433

8 4,279,593
31 4,279,594
55 4,279,595
126 4,279,596
129 4,279,597
173 4,279,598

CLASS 434

21 4,279,599
219 4,279,600
247 4,279,601

CLASS 435

4 4,279,991
7 4,279,992
14 4,279,993
19 4,279,994
38 4,279,995
69 4,279,996
80 4,279,997
174 4,279,998
183 4,279,999
242 4,280,000
253 4,280,001
298 4,280,002

CLASS 440

63 4,279,602
90 4,279,603

CLASS 455

55 4,280,225
345 4,280,226

CLASS 474

82 4,279,172
4,279,605
257 4,279,606

CLASS 493

167 4,279,607
247 4,279,608
276 4,279,609
411 4,279,610
418 4,279,611

CLASS 518

700 4,279,830

CLASS 521

31 4,280,003
89 4,280,004
90 4,280,005
154 4,280,006
159 4,280,007

CLASS 548

301 4,280,008

CLASS 560

205 4,280,009
4,280,010

CLASS 568

603 4,280,011
755 4,280,012

CLASSIFICATION OF DESIGNS

D2— 131 259,895
440 259,896
259,897
259,898
259,899
D3— 30 259,900
D6— 7 259,901
37 259,902
74 259,903
85 259,904
86 259,905
97 259,906
175 259,907
D7— 181 259,908
20 259,909
45 259,910
161 259,911
198 259,912
D8— 58 259,913
318 259,914
320 259,915
350 259,916
D9— 311 259,919
348 259,917
349 259,920
377 259,921
418 259,922
423 259,918
D10— 6 259,923
65 259,924
71 259,925
106 259,926
D12— 62 259,927
98 259,928
140 259,929
211 259,930
D14— 33 259,932
58 259,933
D15— 5 259,934
259,935
63 259,936
D21— 13 259,937
59 259,938
147 259,939
212 259,940
214 259,941
229 259,942
241 259,943
D22— 7 259,944
259,945
13 259,946
259,947
14 259,948
D23— 42 259,950
127 259,949
153 259,951
D24— 13 259,952
38 259,953
62 259,954
64 259,955
D25— 1 259,956
19 259,957
72 259,958
259,959
D26— 24 259,960
26 259,961
37 259,962
113 259,963
D28— 37 259,964
50 259,965
70 259,966
D30— 13 259,967
99 259,968
D99— 51 259,969

CLASSIFICATION OF PLANTS

76 4,752
78 4,753

U.S. GOVERNMENT PRINTING OFFICE : O—1981

GEOGRAPHICAL INDEX
OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

6 : Re.30,682	4,279,570	4,280,219	4,279,199	4,279,935	4,279,722
01 : 4,279,426	4,279,571	4,280,220	4,279,200	4,280,021	4,279,774
04 : 4,279,043	4,279,602	4,280,224	4,279,220	4,280,027	4,279,779
4,279,056	4,279,608	08 : 4,279,433	4,279,270	4,280,092	4,279,871
4,279,244	4,279,627	4,279,459	4,279,292	4,280,104	4,279,879
4,279,947	4,279,632	4,279,504	4,279,382	4,280,126	4,280,055
4,280,035	4,279,638	4,279,508	4,279,425	4,280,140	4,280,127
05 : 4,279,051	4,279,662	4,279,886	4,279,567	4,280,217	4,280,141
06 : 4,279,069	4,279,680	09 : 4,279,075	4,279,572	4,280,226	4,280,203
4,279,090	4,279,684	4,279,121	4,279,599	18 : 4,279,039	25 : 4,279,085
4,279,095	4,279,716	4,279,123	4,279,681	4,279,052	4,279,147
4,279,097	4,279,744	4,279,294	4,279,796	4,279,151	4,279,159
4,279,099	4,279,753	4,279,296	4,279,877	4,279,203	4,279,168
4,279,103	4,279,775	4,279,335	4,279,900	4,279,704	4,279,205
4,279,106	4,279,831	4,279,351	4,280,028	4,279,977	4,279,207
4,279,109	4,279,882	4,279,358	13 : 4,279,071	4,279,992	4,279,234
4,279,118	4,279,887	4,279,391	4,279,120	4,279,993	4,279,354
4,279,125	4,279,897	4,279,466	4,279,201	4,279,994	4,279,390
4,279,178	4,279,906	4,279,471	4,279,288	4,280,023	4,279,401
4,279,181	4,279,989	4,279,535	4,280,030	19 : 4,279,225	4,279,487
4,279,188	4,280,000	4,279,568	16 : 4,279,444	4,279,658	4,279,503
4,279,195	4,280,006	4,279,624	4,279,788	4,279,780	4,279,522
4,279,214	4,280,018	4,279,868	17 : 4,279,042	4,279,791	4,279,558
4,279,221	4,280,025	4,279,941	4,279,091	4,279,823	4,279,590
4,279,224	4,280,039	4,279,948	4,279,098	20 : 4,279,067	4,279,629
4,279,252	4,280,056	4,279,970	4,279,100	4,279,260	4,279,670
4,279,263	4,280,074	4,279,978	4,279,174	4,279,422	4,279,714
4,279,275	4,280,090	4,279,979	4,279,227	4,279,524	4,279,715
4,279,280	4,280,097	4,280,047	4,279,264	4,279,556	4,279,726
4,279,301	4,280,098	4,280,051	4,279,285	4,279,636	4,279,801
4,279,302	4,280,100	4,280,059	4,279,298	4,279,676	4,279,824
4,279,314	4,280,105	4,280,123	4,279,311	21 : 4,279,189	4,279,843
4,279,321	4,280,106	4,280,164	4,279,318	4,279,198	4,279,870
4,279,336	4,280,107	4,280,179	4,279,319	4,279,521	4,279,936
4,279,343	4,280,108	4,280,180	4,279,320	4,279,523	4,279,983
4,279,355	4,280,109	4,280,185	4,279,327	4,279,781	4,280,005
4,279,361	4,280,112	10 : 4,279,053	4,279,341	4,280,144	4,280,052
4,279,367	4,280,121	4,279,240	4,279,348	22 : 4,279,096	4,280,054
4,279,377	4,280,124	4,279,644	4,279,352	4,279,272	4,280,122
4,279,378	4,280,125	4,279,794	4,279,369	4,279,304	4,280,152
4,279,379	4,280,130	4,279,815	4,279,375	4,279,305	4,280,184
4,279,392	4,280,138	4,279,934	4,279,376	4,279,306	4,280,204
4,279,393	4,280,148	4,279,960	4,279,457	4,279,307	26 : Re.30,683
4,279,403	4,280,150	4,279,964	4,279,537	4,279,308	4,279,087
4,279,421	4,280,153	11 : 4,279,969	4,279,547	4,279,808	4,279,110
4,279,452	4,280,155	12 : Re.30,681	4,279,573	4,279,811	4,279,131
4,279,467	4,280,157	4,279,048	4,279,578	4,279,842	4,279,132
4,279,469	4,280,163	4,279,082	4,279,585	4,280,029	4,279,162
4,279,482	4,280,178	4,279,092	4,279,597	23 : 4,279,389	4,279,173
4,279,507	4,280,193	4,279,101	4,279,637	24 : 4,279,255	4,279,183
4,279,509	4,280,194	4,279,122	4,279,759	4,279,409	4,279,219
4,279,510	4,280,195	4,279,148	4,279,858	4,279,618	4,279,257
4,279,527	4,280,196	4,279,197	4,279,933	4,279,674	4,279,259

4,279,271
4,279,273
4,279,287
4,279,368
4,279,370
4,279,413
4,279,436
4,279,441
4,279,442
4,279,533
4,279,577
4,279,582
4,279,587
4,279,634
4,279,645
4,279,666
4,279,675
4,279,782
4,279,783
4,279,792
4,279,797
4,279,839
4,279,840
4,279,854
4,279,922
4,279,930
4,279,943
4,280,019
4,280,087
4,280,202
27 : 4,279,070
4,279,102
4,279,373
4,279,374
4,279,420
4,279,430
4,279,437
4,279,555
4,279,707
4,279,768
4,279,852
4,279,973
4,280,002
4,280,069
4,280,145
28 : 4,279,291
4,280,095
29 : 4,279,059
4,279,145
4,279,231
4,279,276
4,279,461
4,279,607
4,279,789
4,279,863
4,279,939
4,279,995
4,280,013
4,280,181
30 : 4,279,108
4,279,312
31 : 4,279,104
4,279,365

4,279,449
4,279,998
32 : Re.30,685
4,280,044
33 : 4,279,519
4,279,611
4,279,749
4,279,972
4,280,168
34 : Re.30,684
4,279,161
4,279,190
4,279,342
4,279,362
4,279,388
4,279,453
4,279,465
4,279,479
4,279,513
4,279,525
4,279,663
4,279,664
4,279,665
4,279,688
4,279,732
4,279,737
4,279,764
4,279,773
4,279,803
4,279,806
4,279,807
4,279,809
4,279,812
4,279,830
4,279,851
4,279,874
4,279,890
4,279,891
4,279,896
4,279,902
4,279,940
4,279,976
4,280,024
4,280,032
4,280,045
4,280,076
4,280,082
4,280,182
4,280,191
35 : 4,279,111
4,279,241
4,279,345
36 : Re.30,687
4,279,055
4,279,057
4,279,061
4,279,081
4,279,086
4,279,129
4,279,141
4,279,192
4,279,223
4,279,248

4,279,256
4,279,258
4,279,356
4,279,364
4,279,381
4,279,396
4,279,415
4,279,423
4,279,455
4,279,458
4,279,463
4,279,474
4,279,488
4,279,492
4,279,496
4,279,499
4,279,506
4,279,553
4,279,574
4,279,601
4,279,606
4,279,620
4,279,656
4,279,657
4,279,667
4,279,673
4,279,717
4,279,725
4,279,841
4,279,855
4,279,859
4,279,860
4,279,861
4,279,862
4,279,898
4,279,901
4,279,942
4,279,944
4,279,971
4,279,988
4,280,011
4,280,060
4,280,066
4,280,073
4,280,084
4,280,093
4,280,115
4,280,128
4,280,162
4,280,176
4,280,177
4,280,188
4,280,197
4,280,209
4,280,218
4,280,222
37 : 4,279,045
4,279,156
4,279,206
4,279,277
4,279,346
4,279,347
4,280,170

38 : 4,279,566
39 : 4,279,050
4,279,084
4,279,113
4,279,115
4,279,142
4,279,187
4,279,236
4,279,254
4,279,284
4,279,317
4,279,333
4,279,357
4,279,366
4,279,435
4,279,438
4,279,440
4,279,562
4,279,628
4,279,683
4,279,729
4,279,746
4,279,777
4,279,798
4,279,799
4,279,829
4,279,833
4,279,937
4,279,953
4,279,958
4,279,975
4,280,038
4,280,129
4,280,169
4,280,173
4,280,205
4,280,223
40 : 4,279,078
4,279,266
4,279,386
4,279,394
4,279,600
4,279,621
4,279,659
4,279,705
4,279,735
4,279,738
4,279,739
4,279,869
4,279,881
4,280,200
41 : 4,279,564
4,279,594
4,279,745
4,280,091
4,280,116
42 : Re.30,686
4,279,073
4,279,074
4,279,094
4,279,127
4,279,140

4,279,166
4,279,169
4,279,211
4,279,274
4,279,279
4,279,293
4,279,330
4,279,332
4,279,338
4,279,350
4,279,380
4,279,400
4,279,414
4,279,563
4,279,569
4,279,583
4,279,584
4,279,595
4,279,643
4,279,650
4,279,696
4,279,700
4,279,703
4,279,710
4,279,711
4,279,762
4,279,767
4,279,814
4,279,913
4,279,928
4,279,951
4,279,959
4,280,048
4,280,071
4,280,077
4,280,114
4,280,192
4,280,212
44 : 4,279,309
45 : 4,279,551
47 : 4,279,088
4,279,117
4,279,297
4,279,592
4,279,612
4,279,828
48 : 4,279,130
4,279,137
4,279,155
4,279,164
4,279,167
4,279,300
4,279,303
4,279,316
4,279,326
4,279,337
4,279,404
4,279,450
4,279,546
4,279,548
4,279,622
4,279,623

49 : 4,279,077
4,279,083
4,279,743
4,279,885
4,280,099
50 : 4,279,185
4,279,238
51 : 4,279,037
4,279,046
4,279,058
4,279,124
4,279,209
4,279,217
4,279,243
4,279,299
4,279,344
4,279,439
4,279,552
4,279,702
4,279,822
4,280,050
4,280,081
4,280,085
4,280,135
53 : 4,279,044
4,279,128
4,279,204
4,279,398
4,279,416
4,279,419
4,279,429
4,279,610
4,279,736
4,279,741
4,279,875
4,280,221
55 : 4,279,116
4,279,175
4,279,179
4,279,250
4,279,269
4,279,334
4,279,359
4,279,411
4,279,446
4,279,826
4,280,062
4,280,211
56 : 4,279,093
4,279,518

DESIGN PATENTS

6 : 259,936
259,939
06 : 259,896
259,897
259,898
259,899
259,904
259,907
259,911
259,917

259,919
259,923
259,941
259,945
259,946
259,947
259,948
259,951
08 : 259,944
259,964

09 : 259,909
12 : 259,931
17 : 259,914
259,915
259,916
259,918
259,926
259,937
259,963
22 : 259,901

24 : 259,949
30 : 259,895
34 : 259,933
259,956
259,966
259,969
36 : 259,903
259,908
259,934
259,935

259,938
259,953
37 : 259,910
39 : 259,900
259,925
259,955
259,958
259,959
259,961
42 : 259,905

259,929
259,932
259,940
48 : 259,928
259,950
259,957
259,960
259,967
51 : 259,902
55 : 259,906

U.S. GOVERNMENT PRINTING OFFICE : O—1981

CHANGE OF ADDRESS FORM

NAME—FIRST, LAST

COMPANY NAME OR ADDITIONAL ADDRESS LINE

STREET ADDRESS

CITY | STATE | ZIP CODE

PLEASE PRINT OR TYPE

(or) COUNTRY

Mail this form to: NEW ADDRESS

Superintendent of Documents
Government Printing Office SSOM
Washington, D.C. 20402

Attach last subscription label here.

SUBSCRIPTION ORDER FORM

SUBSCRIPTION ORDER FORM

ENTER MY SUBSCRIPTION TO:

@ $ Domestic; @ $ Foreign.

NAME—FIRST, LAST

COMPANY NAME OR ADDITIONAL ADDRESS LINE

STREET ADDRESS

CITY | STATE | ZIP CODE

PLEASE PRINT OR TYPE

(or) COUNTRY

☐ Remittance Enclosed (Make checks payable to Superintendent of Documents)

☐ Charge to my Deposit Account No. .....

MAIL ORDER FORM TO:
Superintendent of Documents
Government Printing Office
Washington, D.C. 20402

U.S. DEPARTMENT OF COMMERCE
Malcolm Baldrige, *Secretary*
PATENT AND TRADEMARK OFFICE
Gerald J. Mossinghoff, *Commissioner*